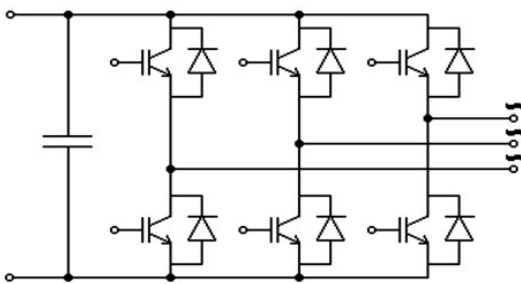
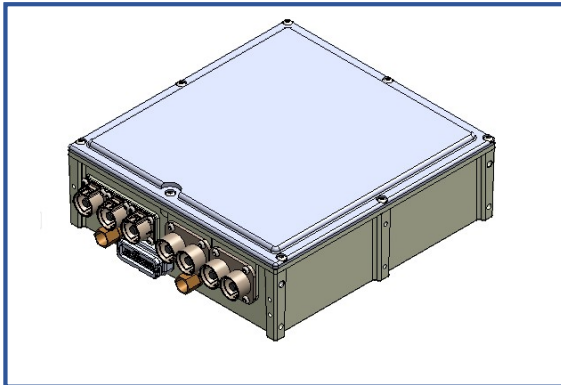


Three-phase IGBT inverter

135 kVA



Structure

- liquid heatsink with three modules of the MIDA-HB17FA-450N type and a temperature sensor (NTC) installed on it;
- DC buses with installed capacitors with a total capacity of 500 μ F;
- three-phase AC busbars;
- driver boards for each of the MIDA-HB17FA-450N module;
- system board for interaction with an external control system;
- three-phase AC output current sensor;
- 35-pin interface connector (Harting type);
- electromagnetic radiation filter;
- design elements.

Features

- closed sealed housing;
- water-cooling;
- connecting an external control system via the interface connector.

Typical application

- Installation on vehicles for powering the AC motors.

General conditions

Definition	Symbol	Conditions	Value	Unit
Number of phases at output	n		3	
Operating temperature	T_a		-40...+75	$^{\circ}$ C
Storage temperature	T_s		-40...+75	$^{\circ}$ C
Differential pressure of coolant	ΔP	max	0.5	bar
Relative humidity, non-condensing	RH	max	95	%
Ingress Protection Rating	IP		67	
Dimensions	WxLxH	max	311x360x100	
Heatsink		glycol/water (50/50)	forced liquid	
Service life		min	5	years

Electrical characteristics

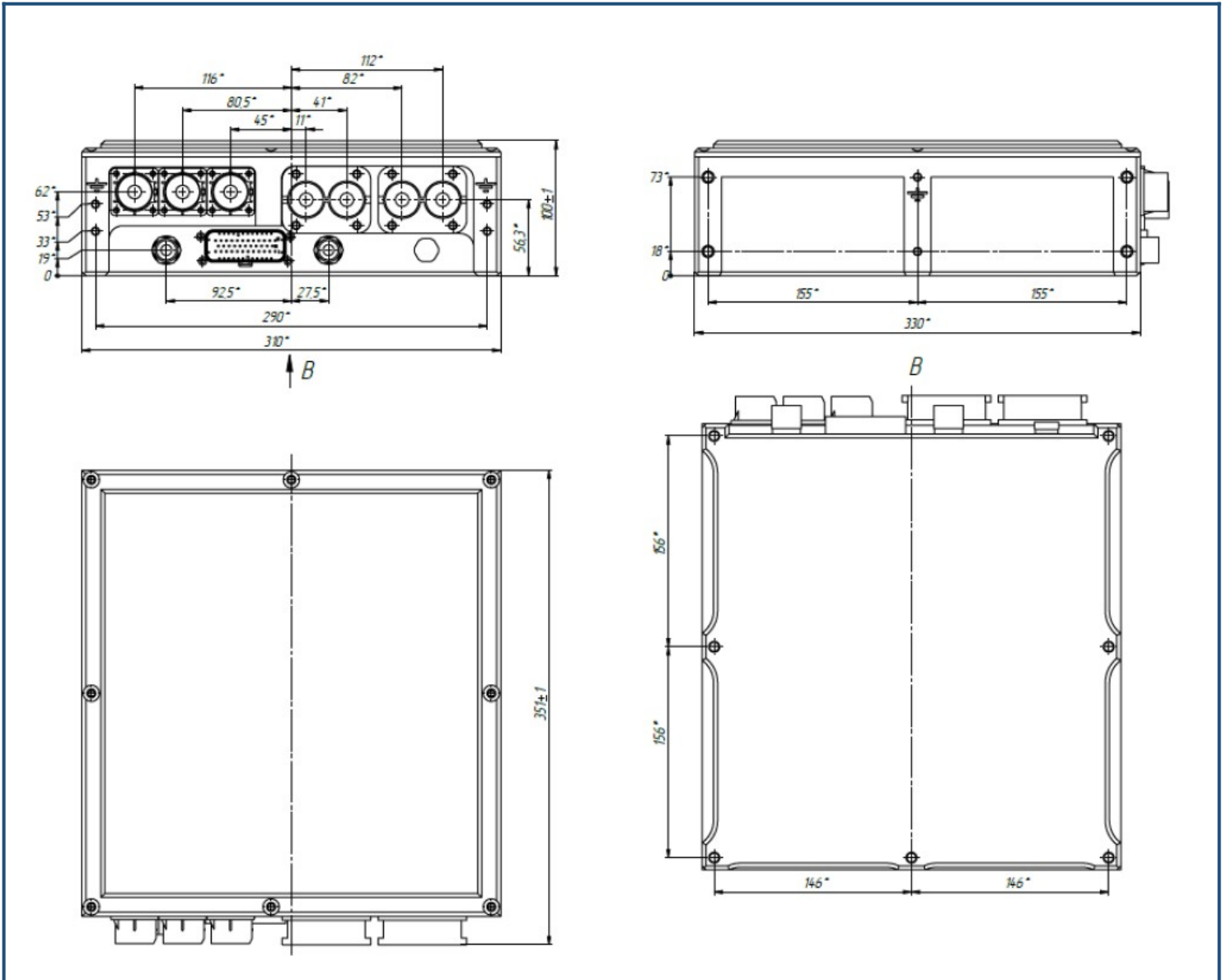
Definition	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Full power output	$P_{out(f)}$			135	195*	kVA
Active power output	$P_{out(a)}$			114	150*	kVA
DC voltage	V_{DC}		0	750	800*	V
Direct input current	I_{DC}			150*	260*	A
Line output voltage	$V_{AC(L)}$	RMS		520		V
Output phase current	I_{AC}	RMS		150		A
Switching frequency	f_{sw}		0,5	4	8*	kHz
Output frequency of main harmonic	f_{out}			50		kHz
Output power factor	$\cos \phi$			0,85		
Ambient temperature	T_a	max		50		$^{\circ}$ C
Heatsink temperature	T_h			60	65	$^{\circ}$ C
Flow rate of coolant	v			10		l/min

Characteristics of the control system**

Definition	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Supply voltage of low voltage part	V_{CC}		8	20	32	V_{DC}
Maximum current consumption of low voltage part, $V_{CC} = 20\text{ V}$	I_{S_MAX}			1		A
The range of voltage values of the logical " 1 " input discrete signals	V_{IN_H}		$0.7 \times V_{CC}$		$V_{CC} + 0.3$	V_{DC}
The range of voltage values of the logical " 0 " input discrete signals	V_{IN_L}		-0.3		$0.3 \times V_{CC}$	V_{DC}
Minimum input impedance of digital inputs	R_{DIN_MIN}			4,7		kOhm
Type of discrete output signals (HALT, ERR_A0, ERR_A1, ERR_A2)	-		open collector			
Maximum current of discrete output signals (HALT, ERR_A0, ERR_A1, ERR_A2)	I_{DO_MAX}			50		mA
Low output voltage level for alarm signals (HALT, ERR_A0, ERR_A1, ERR_A2), $V_{CC} = \text{Min}$, $I_{OL} = 50\text{ mA}$	V_{DO_L}				0,8	V
High-level input current for alarm signals (HALT, ERR_A0, ERR_A1, ERR_A2), $V_{CC} = \text{Max}$	I_{DIN_H}			100		μA
Current measurement range at output power terminals, instant value	I_{OUT}		-450		+450	A
Maximum peak value of current in phase for triggering protection	$I_{OUT(OC)}$			450		A
Temperature measurement range	T_C		30		150	$^{\circ}\text{C}$
IGBT Module baseplate temperature for triggering the overheating protection	$T_{C(OT)}$			75		$^{\circ}\text{C}$
DC voltage measurement range	V_{DC}		0		1000	V_{DC}
DC voltage value for triggering the overvoltage protection	$V_{DC(OV)}$			820		V_{DC}
Output voltage range, for bipolar outputs, analog outputs	$V_{O_LV_B}$		0	± 10	± 12	V_{DC}
Output voltage range, for unipolar outputs, analog outputs	$V_{O_LV_U}$		0	10	12	V_{DC}
Load capacity of output analog signals from the measurement channels: - currents, - temperature and DC voltage	I_{AO}		-4 0		+4 4	mA

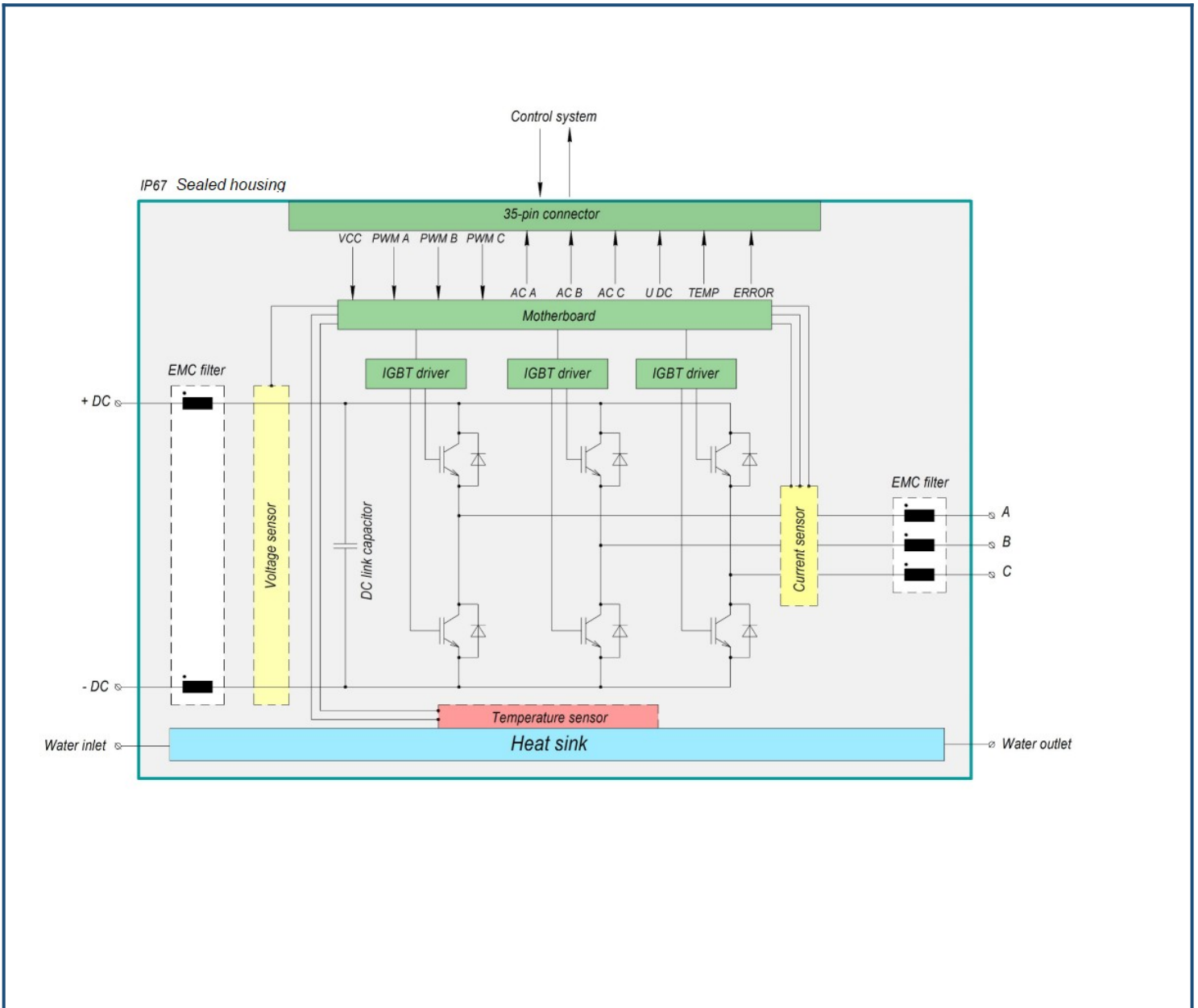
* Maximum overload characteristics (up to 50% * current for 60 seconds followed by a pause of at least 10 minutes*).

** The control system of the power unit includes driver boards and a system board.

Overall dimensions:


Interface connector contacts

No	Symbol	Definition
1	VCC	Auxiliary power supply “+”
2	PWR_GND	Auxiliary power supply ground
3	DC_LINC_DISCH	Reserve (no active discharge of the DC link)
4	HALT	General protection trigger signal / external alarm signal
5	TEMP_GND	IGBT Baseplate Temperature GND
6	PWM1_TOP	PWM top phase A
7	PWM1_BOT	PWM bot phase A
8	PWM2_TOP	PWM top phase B
9	PWM2_BOT	PWM bot phase B
10	PWM3_TOP	PWM top phase C
11	PWM3_BOT	PWM bot phase C
12	ERR_A0	Protection trigger signal is the lower digit A0
13	VCC	Auxiliary power supply “+”
14	PWR_GND	Auxiliary power supply ground
15	ERR/RES_GND	Generalized protection trigger signal / external alarm signal GND
16	TEMP	IGBT Baseplate Temperature
17	Reserved	Reserved
18	PWM1_GND	PWM phase A GND
19	Reserved	Reserved
20	PWM2_GND	PWM phase B GND
21	Reserved	Reserved
22	PWM3_GND	PWM phase C GND
23	ERR_A1	Protection trigger signal medium discharge A1
24	VCC	Auxiliary power supply “+”
25	PWR_GND	Auxiliary power supply ground
26	Reserved	Reserved
27	VDC	DC voltage
28	VDC_GND	DC voltage GND
29	IA	Phase A current
30	IA_GND	Phase A current GND
31	IB	Phase B current
32	IB_GND	Phase B current GND
33	IC	Phase C current
34	IC_GND	Phase C current GND
35	ERR_A2	Protection trigger signal high level A2

Block diagram

Part numbering guide

B	I	TR	-	150	-	0.52	-	1	-	W	-	N	2	
B														Power unit
	I													Inverter
		TR												Transistors (IGBT)
				150										Operating current (A)
						0.52								Operating voltage (kV)
								1						Design
										W				Type of cooling (water)
												N		Climatic version
													2	Placement category

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