



SPECIFICATION

Model: 6.5kVA Hybrid Inverter

Sales Territory: India

Product Type: Hybrid Solar Inverter

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1. Product Configuration

This specification includes one types of board card products.

Mode	Power
U.PSDR.VMH.CT6KU	6.5kVA

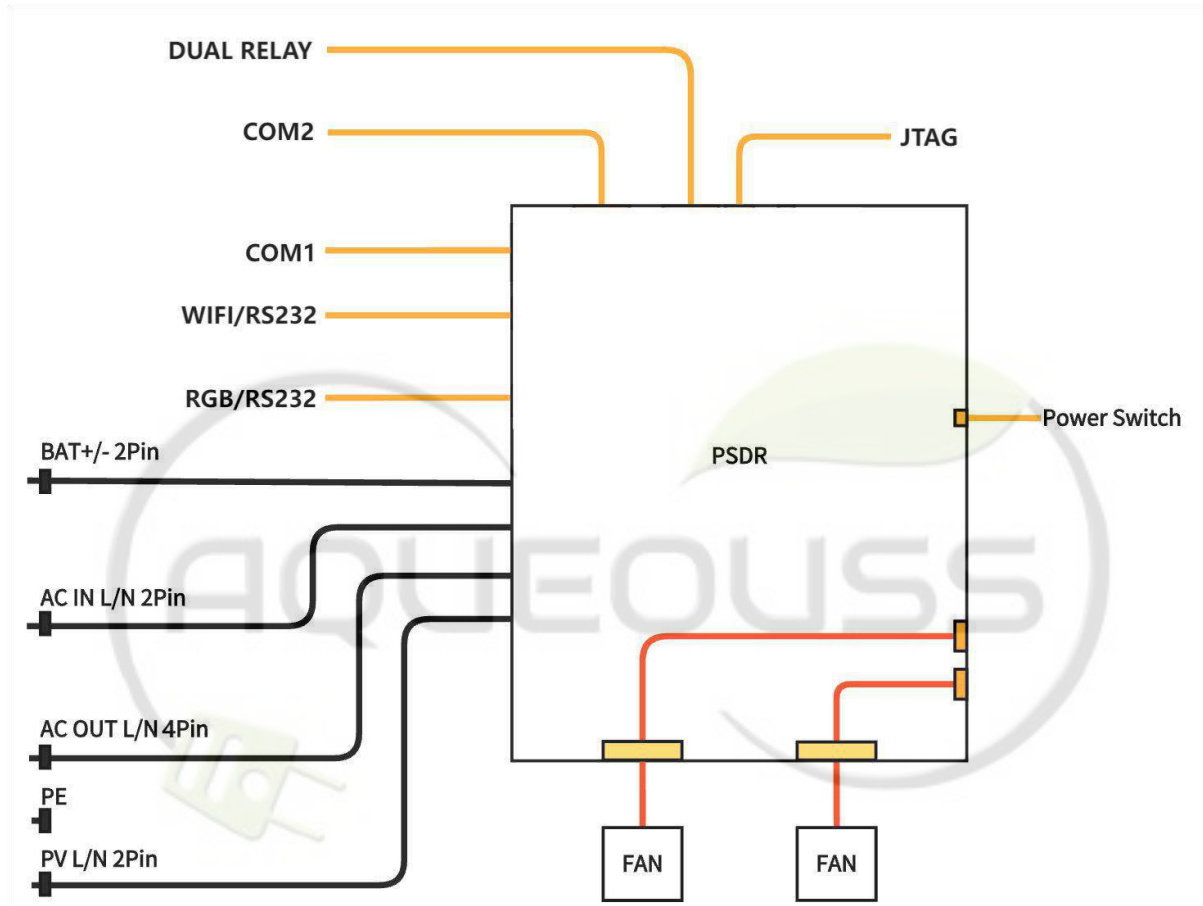
Note: The specific product content is subject to the real object.If the configurations above can't meet your demand, please apply to our sales stuff.This document is subject to change without prior notice.



2. FUNCTION DESCRIPTION

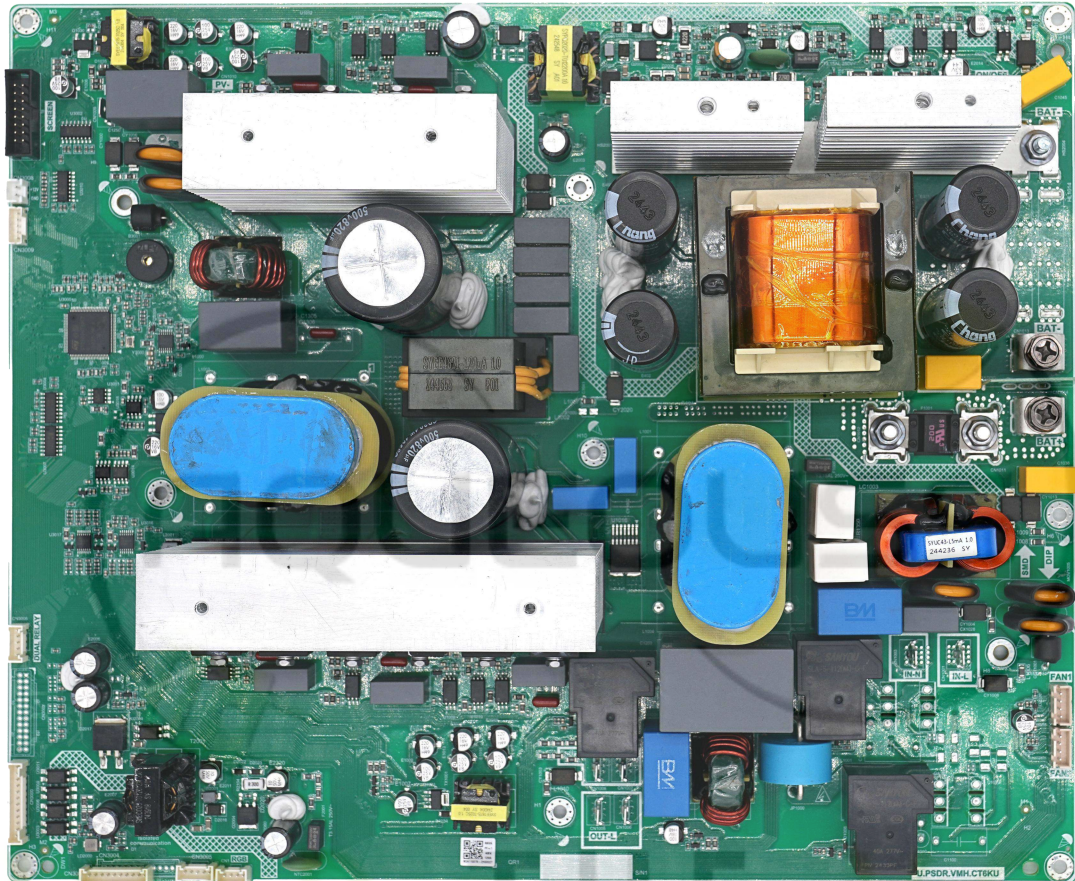
SYSTEM BLOCK DIAGRAM:

U.PSDR.VMH.CT6KU



3. BOARD PICTURE

Pictures are for reference only, specific to prevail in kind.



4. FEATURES

Board Model		U.PSDR.VMH.CT6KU (Power 6.5kVA) L×W×H (mm) : 346×285×75 Net Weight (kg) : 4.0
AC Input	Main topology	L+N+PE
	Nominal Voltage	230VAC
	Input Voltage Range	90~280V(APP MODE) 90~280V(GEN MODE) 170~264V(UPS MODE)
	Frequency Range	40-70Hz (APP MODE/GEN MODE) Set Frequency (50Hz or 60Hz) ± 10Hz (UPS MODE)
	Power Factor	≥0.99
PV Input	Max Voltage	500V
	Max input current	27A
	PV input short-circuit current current	33A
	Max Input Power	9000W
AC Output	Main topology	L+N+PE
	Output Voltage	208/220/230/240VAC
	Voltage Regulation	≤±5% (Within the rated load range)
	Power factor	1
	Frequency Range	Line Mode: Synchronized range, Battery Mode: 50/60Hz±0.1%
	Harmonic Distortion	≤3% (Linear Load)

	Overlord Capacity	Battery Mode : 1min@102%~120%Load 10s@>120%Load bypass mode: 1min@40-50A 10s@50A-55A 200ms@>55A
Battery	Nominal Voltage	48V
	Charging Mode	Two-stage, automatic two/three-stage
	Charging Current	2~120A
Environment	Ambient temperature	-10°C~60°C
	Humidity	20%~95% (No condensing)
	Storage temperature	-15~60°C
	Altitude	The altitude should not exceed 1000m, with a decrease in rating above 2000m and a maximum of 4000m, in accordance with IEC62040
Indicators	LCD	2*8pin/pitch 2.54mm, supports 128-bit segment code, supports up to 4 buttons + 4 LEDs, and can display run/input/output/load mode, etc.
Communication	RS232 Port	5-pin/Pitch 2.0mm, Baud Rate 9600
	Expansion port	
Paralled Function (Optional)	Quantity	Supports up to 9 machines in parallel
	Special instructions	When paralled function is enabled, system can not operate in only PV mode(withoud battery and grid)/Energy-saving mode / Inverter soft start function.

5. ELECTRICAL CHARACTERISTICS

5.1 AC Input

	Item	Value	Comments
Input Voltage	Main topology	L + N + PE	
	Nominal voltage	230VAC	
	Input Voltage Range	90~280Vac	
	Input Low Loss	154Vac(default) Settable:90-154	APP/GEN mode
		185Vac (default) Settable:170-200	UPS mode
	Input Low Comeback	Low Loss voltage +9V	
	Input High Loss	264Vac(default) Settable:264-280	APP/GEN mode
		264Vac	UPS mode
Input Frequency	Nominal Frequency	50.0Hz/60.0Hz	
	Freq. Low loss / Comeback	40/43.5Hz@50Hz(UPS mode)	
		50/53.5Hz@60Hz(UPS mode)	
	Freq. High loss / Comeback	40/40.5HZ@50HZ/60Hz (APP/GEN mode)	
		60/56.5Hz@50Hz(UPS mode)	
Input current	Nominal Current (RMS)	26A	Vrms=230V
			Line mode with 100% capacity. Charger not included.

	Max Current (RMS)	40A	Bypass current
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5.2 Battery

* N= battery pieces

	Item	Value	Comments
		U.PSDR.VMH.CT6K	
Battery information	Battery Pieces	4pcs	12V/PCS
	Auto Restart Function	Yes	
	Battery test function	No	
	Battery type	AGM (Lead Acid) / FLD (Water-filled) / LIB (Lithium-ion Battery) / FEL (Lithium Iron Fertilizer) / CUS (Custom)	
	Nominal Battery voltage	N*12V	@25°C
	Battery management	Yes	
Battery protection	Battery over Voltage	61V	
	Battery under voltage	10.5V*N	Settable:10*N~11*N
	Battery low voltage alarm	10.8V*N	Settable:10.3*N~11.3*N
	Over current protection	Fuse	Fast acting

5.3 Charger

	Item	Value	Comments
		U.PSDR.VMH.CT6K	
Charger (line mode)	Charging voltage	FV MODE : 54 V CV MODE : 56.4V	
	Charging Current	2~120A	Settable
	Default Charging Current	60A	
	Charging mode	Two Step/Auto	Three Step: CC/CV/Float Two Step: CC/Float
	Charge Voltage Accuracy	±5%	Calibrated by RS232
Charger (PV)	PV charging method	MPPT	
	Efficiency	99.5% max	
	MPPT Tracking Range	60-450Vdc	
	Minimum activation voltage	80V	
	Max PV charge current	120A	
Max charging current	/	120A Default:100A	Settable

5.4 Output

	Items	Value	Comments
Output Power rating	Output topology	L + N + PE	
	Output power	6.5kVA	
Output voltage	Nominal Voltage	230Vac	Settable: 208/220/230/240 Vac, Manual set by RS232 or LCD
	Waveform	Sinusoidal	
	Voltage accuracy	±5 %	
	DC offset	±100mV (Bat mode)	Empty load or linear load mode
Output Frequency	Nominal Frequency	50.0 / 60.0 Hz	50/60Hz auto selection (default on) manual set by RS232, default 50 Hz
	Line Mode	50Hz: (40—60)Hz (UPS mode) (40—70)Hz (APP/GEN mode) 60Hz: (50—70)Hz (UPS mode) (40—70)Hz (APP/GEN mode)	
	Battery Mode	50/60Hz	
	Frequency accuracy	0.1%	
Output Short Circuit Protection	Battery mode	Current limitation	
	Line mode	Breaker (40A)	

5.5 Transfer time

	Items	Value	Comments
Transfer time	Line Mode To Battery Mode	10ms(typical)	UPS mode
		10ms(typical)	Appliance mode
		20ms(typical)	Generator mode

5.6 Efficiency

	Items	Value	Comments
Efficiency	Line Mode	>99.5%@6.5kVA	Full R load, without battery connect; Efficiency VS load curve with different input voltage
	Battery Mode	94% (Max)	Full R load; Efficiency VS load curve with different input voltage
	Standby power	<30W	Empty load, Battery Mode

6. PRODUCT FUNCTION & PROTECTIVE VALUE

6.1 Protective value

The main design of external system protection behavior is as follows (Please refer to each module specification and firmware specification for specific protection conditions and instructions)

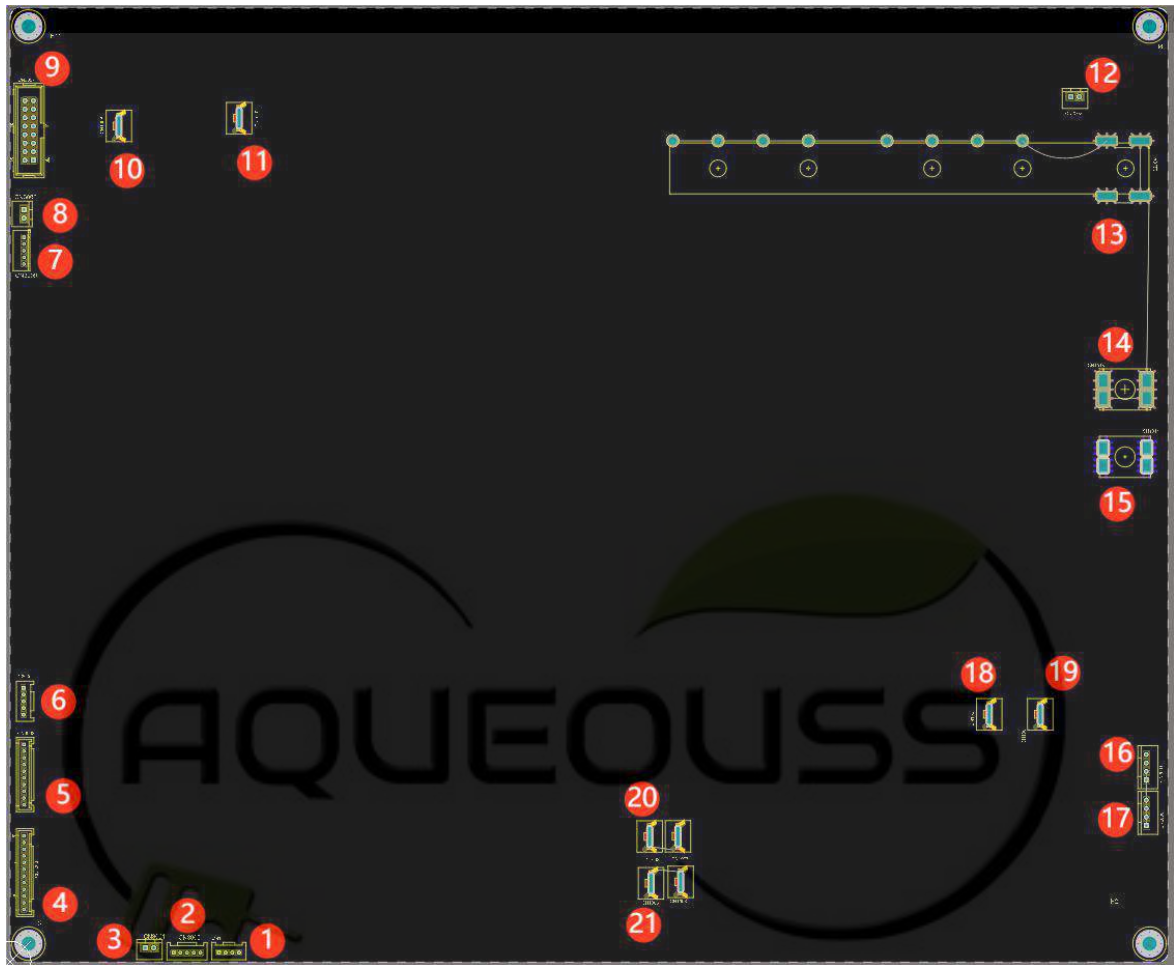
Module	Protect function	
Input	AC low voltage protection	Switch the system to the battery under the line mode;
	AC high voltage protection	Switch the system to the battery under the line mode;
	AC over current protection	Switch to fault mode under the line mode;
	AC frequency offset protection	Switch to battery mode under the line mode;
Battery	Battery low voltage protection	UPS will shut down at different voltage point according to variant load;
	Battery high voltage protection	Transfers to Fault mode;
	Battery Short circuit protection	Transfers to Fault mode;
Photovoltaic	Photovoltaic high voltage protection	Switch to fault mode
	Photovoltaic low voltage protection	Stop photovoltaic output
	Photovoltaic reverse connection protection	Switch to fault mode

Output	Overload protection	Switch to fault mode
	Short circuit protection	Switch to fault mode
	Low-voltage protection	Switch to battery mode under the line mode; Cut off the output in battery mode;
	Over voltage protection	Switch to battery mode under the line mode; Cut off the output in battery mode;



HOLD THE VOLT

7. INTERFACE DEFINITION



U.PSDR.VMH.CT6KU			
NO	SYMBOL	DESCRIPTION	TYPE
1	CN1	RGB (RGB 232)	1×4PIN/Pitch2.0
2	CN3005	Isolation communication signal 1	1×5PIN/Pitch2.0
3	CN3001	+12VA Power test connector	1×2PIN/Pitch2.5
4	CN3000	communication signal 1	1×12PIN/Pitch2.0
5	CN3002	communication signal 2)	1×10PIN/Pitch2.0
6	CN3006	Dual Relay	1×5PIN/Pitch2.0
7	CN3009	Flash connector	1×5PIN/Pitch2.0
8	CN3008	+12V Power test connector	1×2PIN/Pitch2.5
9	CN3007	LCD connector	2×8PIN/Pitch2.54
10	CN1009	PV+	Metal insert/6.35 Width
11	CN1010	PV-	Metal insert/6.35 Width
12	CN2002	Rocker switch	1×2PIN/Pitch2.5

13	HS2004	BAT-	M5 studs
14	CN1013	BAT-	M5 terminal block
15	CN1014	BAT+	M5 terminal block
16/ 17	CN2000/CN2001	FAN connector	1×4PIN/Pitch2.5
18	CN1003	IN-N	Metal insert/6.35 Width
19	CN1001	IN-L	Metal insert/6.35 Width
20	CN1007/CN1008	OUT-N	Metal insert/6.35 Width
21	CN1005/CN1006	OUT-L	Metal insert/6.35 Width

◆ [1] CN1 (1×4PIN/Pitch2.0): +12V RGB (RGB 232)

		
NO	SYMBOL	DESCRIPTION
1	GNDA	Ground
2	RGB.232.RX	RGB 232 RX signal
3	RGB.232.TX	RGB 232 TX signal
4	+5VA	5V isolated power supply

◆ [2] CN3005 (1×5PIN/Pitch2.0): Isolation communication signal 1

		
NO	SYMBOL	DESCRIPTION
1	~PANEL.TXD	Serial port TX signal
2	~PANEL.RXD	Serial port RX signal
3	GNDA	Ground
4	+12VA	+12VA Power
5	NC	/

◆ [3] CN3001 (1×2PIN/Pitch2.5): +12VA Power test connector

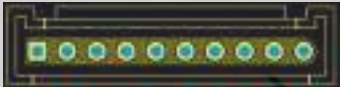
		
NO	SYMBOL	DESCRIPTION
1	+12VA	+12V Power (
2	GNDA	Ground

◆ [4] CN3000 (1×12PIN/Pitch2.0): communication signal 1



NO	SYMBOL	DESCRIPTION
1	BMS485.TX	Control board BMS485 Transmission
2	BMS485.RX	Control board BMS485 Receipt
3	GND	Ground
4	BMSCAN.TX	Control board BMSCAN Transmission
5	BMSCAN.RX	Control board BMSCAN Receipt
6	GND	Ground
7	NC	/
8	WIFI.RESET	Built in WIFI board reset signal
9	GND	Ground
10	BMS485.EN	Control board BMS 485 Enable
11	DRY.RLY	Dry Contact 1 Control Signal
12	+3.3VD	+3.3V Power

◆ [5] CN3002 (1×10PIN/Pitch2.0): communication signal 2



NO	SYMBOL	DESCRIPTION
1	HOST.TX	Control board parallel HOST Transmission
2	HOST.RX	Control board parallel HOST Receipt
3	GND	Ground
4	PARACAN.TXD	Control board Parallel CAN Transmission
5	PARACAN.RXD	Control board Parallel CAN Receipt
6	GND	Ground
7	SYN.TXD	Control board Parallel SYN Transmission
8	SYN.RXD	Control board Parallel SYN Receipt
9	NC	/
10	+3.3VD	+3.3V Power

◆ [6] CN3006 (1×5PIN/Pitch2.0): Dual Relay



NO	SYMBOL	DESCRIPTION
1	+12V	+12V Power
2	DUAL.RLY	Relay control signal
3	/	/
4	/	/
5	GND	Ground

◆ [7] CN3009 (1×5PIN/Pitch2.0): Flash connector



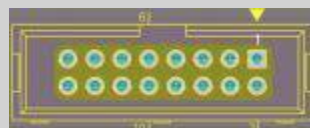
NO	SYMBOL	DESCRIPTION
1	+3.3VD	+3.3V Power
2	SWDIO	Serial Wire Debug
3	SWCLK	Serial Wire Clock
4	RESET	Reset
5	GND	Ground

◆ [8] CN3008 (1x2PIN/Pitch2.54): +12V Power test connector



NO	SYMBOL	DESCRIPTION
1	+12V	+12V Power
2	GND	Ground

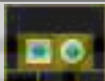
◆ [9] CN3007 (2x8PIN/Pitch2.54): LCD connector



NO	SYMBOL	DESCRIPTION
1	┘BYPASS.LED	Bypass mode signal
2	~INV.LED	Inverter output signal

3	BAT.LED	Battery mode signal
4	FAULT.LED	Fault LED signal
5	KEY.DOWN	Down
6	LCD.WR	Read/write signal
7	LCD.AO	Data signal
8	LCD.BL	Backlight signal
9	LCD.XCS	Chip select signal
10	KEY.SW	SW (Switch Signal)
11	GND	Ground
12	KEY.OFF	Off
13	+5V	+5V Power
14	KEY.UP	Up
15	SWOFF	Enter
16	SWON	

◆ [12]CN2002 (1×2PIN/Pitch2.5): Rocker switch



NO	SYMBOL	DESCRIPTION
1	SPS.V	SPS.V (Auxiliary Power Supply)
2	SPS.ACT	SPS.ACT (Secondary Source Activation)

◆ [16] CN2000/CN2001 (1 x4PIN/Pitch2.5): FAN connector



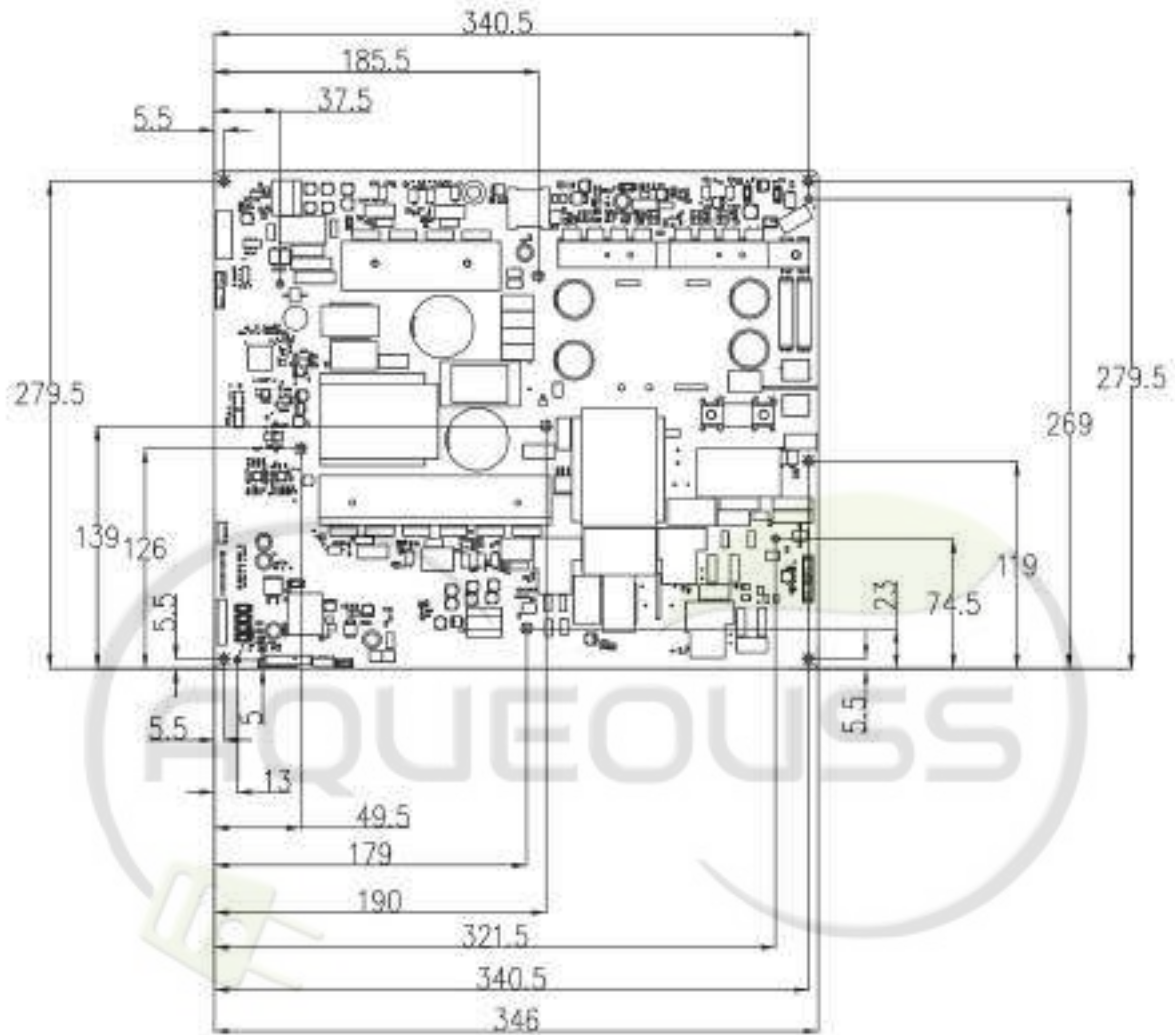
NO	SYMBOL	DESCRIPTION
1	GND_FAN	Fan GND
2	+12VFAN	+12V fan Power
3	MAINFAN.SIG	Fan signal
4	~FANSPEED	Fan speed (PWM signal)

NOTE:

Ensure that all interfaces are checked correctly before use and maintenance.

When matching applications, each control and communication port and power supply shall be within the range of electrical characteristics described in this specification. For special requirements, please contact our hardware engineer for confirmation.

8. Board Size



9. CONFIGURATION & GENERAL PRECAUTIONS

- Guarantee the use of products in conformity with the requirements.
- Please read the product manual carefully before use.
- Protect the board from static electricity in case of damage to the IC.
- Keep the board away from conductor when it is working.
- Don't push or pull the connectors when the board is working.
- Don't press, distort or disassemble the board.
- Clean the board with soft dry cloth when it's dirty.
- Don't power on before panel is correctly connected.
- The whole machine certification performance will be subject to the impact of the whole machine, must use the whole machine to test and confirm.
- Before the power is turned on, the PE terminal of the input must be connected to the ground first.
- Must be equipped with a front circuit breaker with a specification greater than or equal to the maximum input current of the inverter.
- Protect the screw holes during painting to ensure reliable electrical connection between the screws and the chassis.
- Follow the operating instructions for correct wiring.
- The communication line and screen connection line should be far away from the transformer and cannot be crossed from the upper end of the transformer.
- Air duct paper should be selected with a fire rating of 94-V1 or higher.
- The power of the external RGB screen must be less than 3W.
- It is recommended to equip a dust net to prevent dust accumulation and insect invasion.
- Use 8025 or 8032 specification fans, The rated air volume of the fan must be ≥ 68.5 CFM.
- Single fan rated current $\leq 0.75A$.
- The distance between the circuit on the screen PCB and the metal part of the casing must be 4mm. If it is less than 4mm, insulation measures need to be added.
- If you have any questions, please contact us.