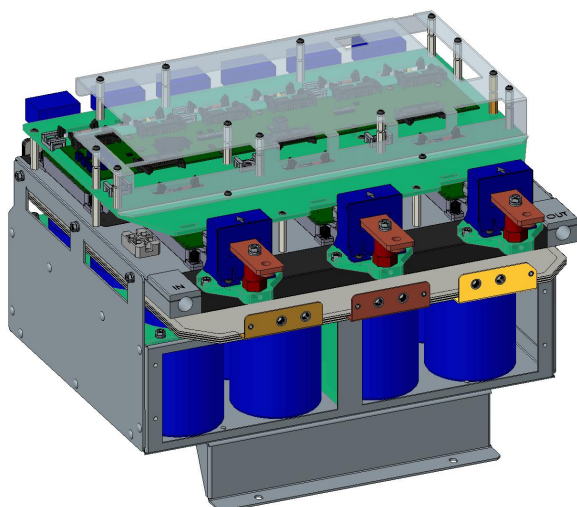


FPS036TA121XWP001 Data Sheet

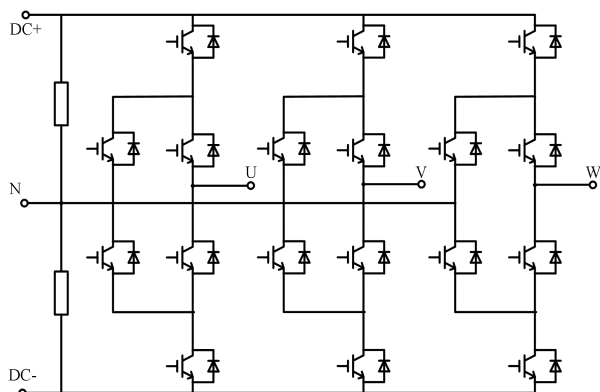


General information:

- Power stack for typical voltages of up to 750 V_{RMS}
- Rated output current 350 A_{RMS}
- Rated output power 450kW

Typical Applications

- Energy storage system converter



Topology	3-phase 3-level ANPC
IGBT Power Modules	12*FF750R12ME7-B11 (Infineon)
Load Type	Resistive, inductive
Bus Capacitor	Film capacitor 1740μF
Cooling	Liquid cooling
Interface	Electrical
Ordering Part Number	FPS036TA121XWP001

Characteristic Parameters

Parameters	Note	Min	Typ	Max	Unit
DC Bus					
Rated voltage V_{DC}	Full bus voltage, applied between + and -		1600		V
AC Phase					
Rated operating voltage V_{line}			750		V_{RMS}
Rated continuous current I_{AC}	$V_{DC}=1600V$, $V_{AC}=750V_{RMS}$, $PF=\pm 1$, $f_{AC}=50Hz$, $f_{sw}=3.5kHz$, $T_{inlet}=45^{\circ}C$, $T_J\leq 125^{\circ}C$		350		A_{RMS}
Rated power P_w	$V_{DC}=1600V$, $V_{AC}=750V_{RMS}$, $PF=\pm 1$, $f_{AC}=50Hz$, $f_{sw}=3.5kHz$, $T_{inlet}=45^{\circ}C$, $T_J\leq 125^{\circ}C$		450		kW
Switching frequency f_{sw}			3.5		kHz
Loss P_{loss}	$I_{AC}=350A$, $V_{DC}=1600V$, $V_{AC}=750V_{RMS}$, $PF=\pm 1$, $f_{AC\ sine}=50Hz$, $f_{sw}=3.5kHz$, $T_{inlet}=45^{\circ}C$		4000		W
Power factor PF		-1.0		1.0	
Controller Interface					
Auxiliary power supply voltage V_{aux}		23.5	24	24.5	V
Auxiliary power requirement P_{aux}			35		W
Auxiliary power supply interface type		24 pin header, 16 pin header			

Auxiliary power supply undervoltage threshold V_{aux_UV}			12		V
PWM signal voltage		0		15.5	V
PWM signal high level threshold V_{PWM_H}			3.2		V
PWM signal low level threshold V_{PWM_L}			1.1		V
Output voltage corresponding to NTC V_{ntc}	$T_{NTC} = 25^{\circ}C$		3.3		V
Fault output current capability I_{FLT}	Fault condition			10	mA
Fault hold time t_{FLTH}			10		ms

System Parameters

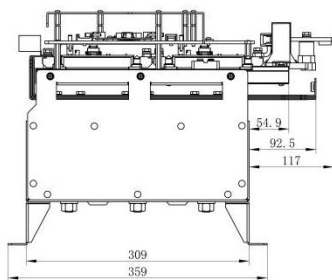
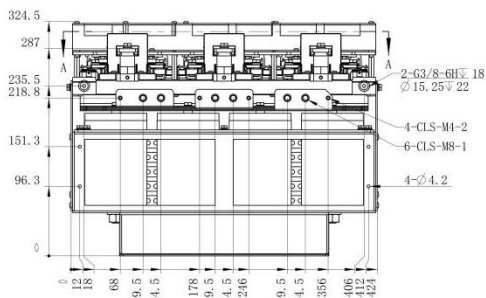
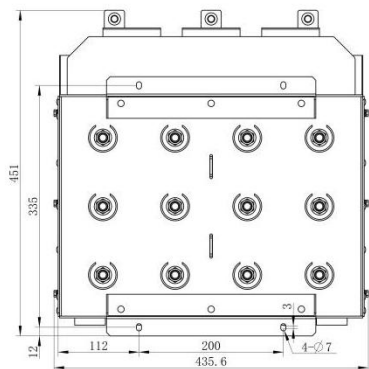
Insulation test voltage V_{isol}	$f=50Hz, t=60s$		2.5		kV _{RMS}
Storage temperature T_{stor}		-45		70	$^{\circ}C$
Operational ambient temperature $T_{op\ amb}$	PCB, DC bus capacitors, DC/AC bus, without cooling	-30		60	$^{\circ}C$
Relative humidity Rel. F	No condensation	0		95	%
Installation altitude		0		3000	m
Protection degree			IP00		
Pollution degree			3		
DC terminal mounting torque M_{DC}			24		Nm
AC terminal mounting torque M_{AC}			55		Nm
Dimensions	Length \times width \times height		424 \times 324.5 \times 451		mm
Weight			46		kg

Water Cooling

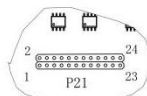
Coolant flow	IGBT water cooling radiator		10		L/min
Maximum coolant inlet temperature			50		$^{\circ}C$
Coolant pressure drop			≤ 40		kPa
Coolant temperature difference			6		K

Dimensions

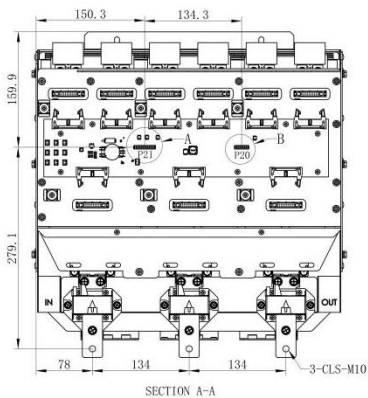
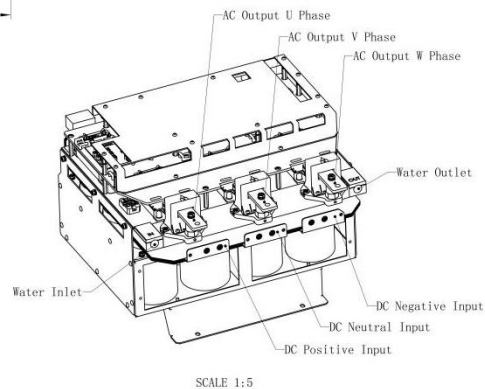
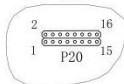
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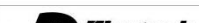



局部放大图 A
1:1

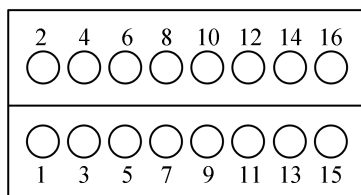


局部放大图 B
1:1



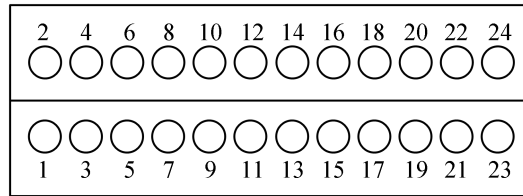
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设计						<div>名称</div> <div>Moudle 424*324.5*151</div> <div>图框</div> <div>A2</div> <div>比例</div> <div>1:4</div> <div>单位</div> <div>重量</div> <div>版本</div> <div>V1.0</div> <div>页码</div> <div>1 / 1</div>			
审核									
校对			项 目						
会签			材 料						
标准化			表 面 处 理						
批准									

Controller Signal Connector Pin Definitions



B

Pin	Signal	Specification	Pin	Signal	Specification
1	Vout_NTC	NTC sampling output value (maximum temperature)	9	FAULTC	Phase C fault output (high level 15V normal)
2	+24V_Vin	Auxiliary power supply voltage	10	NC	
3	GND	Ground for primary side	11	PWMC_T2	Phase C T2 PWM driving signal (15V level valid)
4	GND	Ground for primary side	12	PWMC_T5	Phase C T5 PWM driving signal (15V level valid)
5	GND	Ground for primary side	13	PWMC_T3	Phase C T3 PWM driving signal (15V level valid)
6	GND	Ground for primary side	14	PWMC_T1	Phase C T1 PWM driving signal (15V level valid)
7	+24V_Vin	Auxiliary power supply voltage input	15	PWMC_T4	Phase C T4 PWM driving signal (15V level valid)
8	+24V_Vin	Auxiliary power supply voltage input	16	PWMC_T6	Phase C T6 PWM driving signal (15V level valid)



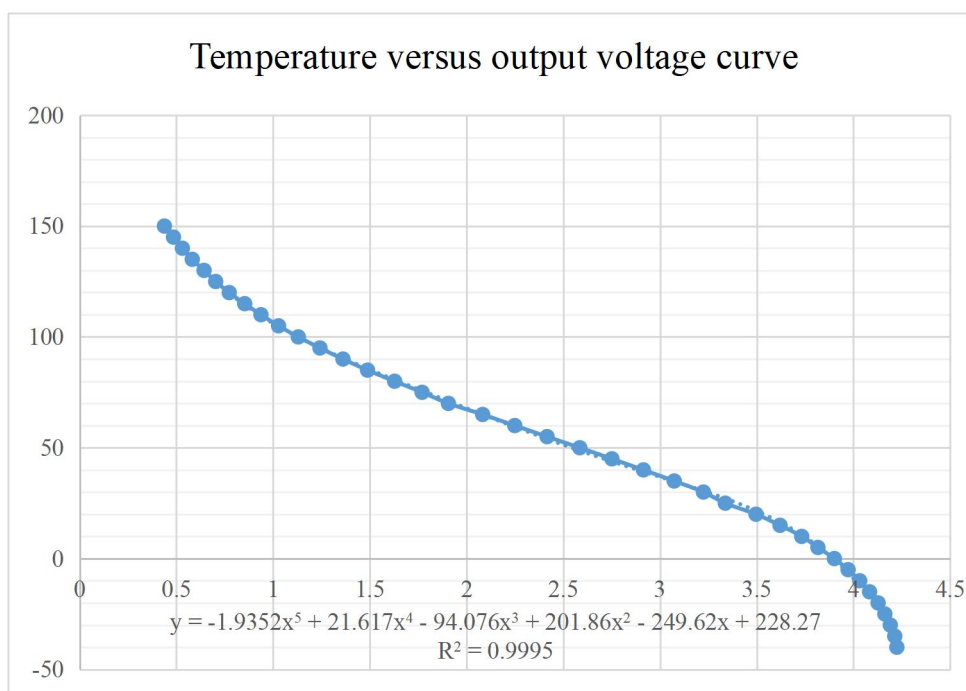
A

Pin	Signal	Specification	Pin	Signal	Specification
1	PWMA_T1	Phase A T1 PWM driving signal (15V level valid)	13	+24V_Vin	Auxiliary power supply voltage input
2	PWMA_T5	Phase A T5 PWM driving signal (15V level valid)	14	+24V_Vin	Auxiliary power supply voltage input
3	PWMA_T2	Phase A T2 PWM driving signal (15V level valid)	15	GND	Ground for primary side
4	PWMA_T4	Phase A T4 PWM driving signal (15V level valid)	16	GND	Ground for primary side
5	PWMA_T3	Phase A T3 PWM driving signal (15V level valid)	17	FAULTB	Phase B fault output (high level 15V normal, low level fault)
6	PWMA_T6	Phase A T6 PWM driving signal (15V level valid)	18	GND	Ground for primary side
7	FAULTA	Phase A fault output (high level 15V normal, low level fault)	19	PWMB_T3	Phase B T3 PWM driving signal (15V level valid)
8	GND	Ground for primary side	20	PWMB_T1	Phase B T1 PWM driving signal (15V level valid)
9	GND	Ground for primary side	21	PWMB_T2	Phase B T2 PWM driving signal (15V level valid)
10	GND	Ground for primary side	22	PWMB_T5	Phase B T5 PWM driving signal (15V level valid)
11	+24V_Vin	Auxiliary power supply voltage input	23	PWMB_T4	Phase B T4 PWM driving signal (15V level valid)
12	+24V_Vin	Auxiliary power supply voltage input	24	PWMB_T6	Phase B T6 PWM driving signal (15V level valid)

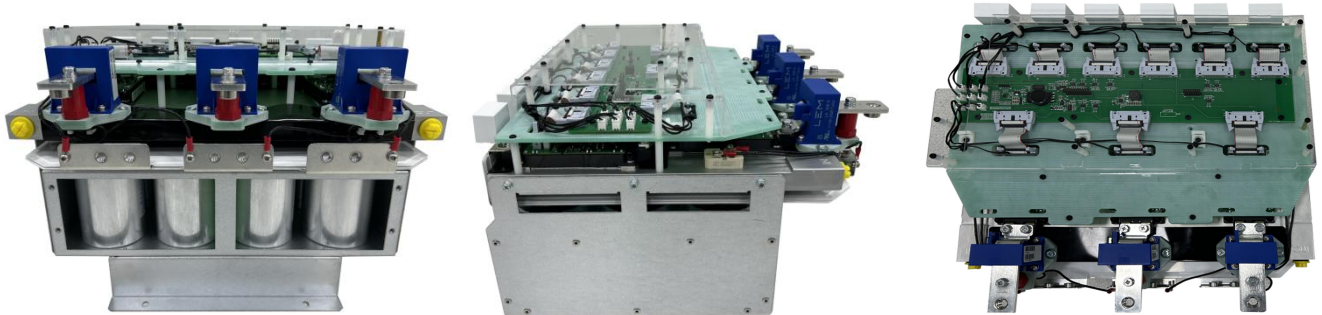
NTC Temperature VS Output Voltage Table

NTC temperature/°C	Voltage/V
-45	4.231
-35	4.213
-25	4.162
-15	4.083
-5	3.972
5	3.816
15	3.620
25	3.337
35	3.073
45	2.751
55	2.416
65	2.083
75	1.770
85	1.488
95	1.242
105	1.028
115	0.937
125	0.703
135	0.582
145	0.516
155	0.471

Temperature versus output voltage curve



Picture of the real power stack



Safety instructions

1. The data contained in this product data sheet is intended for trained engineers only. The usefulness of this product for your planned application scenario, and the completeness of the product information must be evaluated before using this product. No warranty or guarantee is given in this specification for any shipping, product suitability related to this product.

2. Please contact us if you require information that is not presented in the specification or relates to specific product information.

3. Please contact us if you plan to use this product in aviation, health or life support related or similar applications. Please note that for any such applications, we recommend the following:

- Conduct risk and quality assessments
- Complete quality agreement

And we will decide whether or not to provide the product based on the completion of the above measures.

4. This product is not permitted to exceed the nominal maximum value of each parameter under any operating conditions, but this does not mean that the product can be operated under conditions where each parameter reaches the nominal maximum value at the same time.

5. When using this product, you must strictly follow the requirements of the external heat dissipation conditions as indicated in the specifications for the relevant configurations in order to avoid causing the performance of this product to be derated.

6. Before installing or applying this product, you must carefully read the safety-related warning labels or safety instructions on the product and ensure that all safety labels are clearly visible.

Technical support

Firstack's professional team will provide you with business consultation, technical support, product selection, price, lead time and other related information, and guarantee to answer your questions within 48 hours.

Legal disclaimer

This manual gives a detailed introduction about the product, but cannot promise to provide specific parameters. No warranty or guarantee, express or implied, is given herein as to the delivery, performance or applicability of the product.

Firstack reserves the right to modify technical data and product specifications at any time without prior notice. Firstack's general payment terms and conditions apply.

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