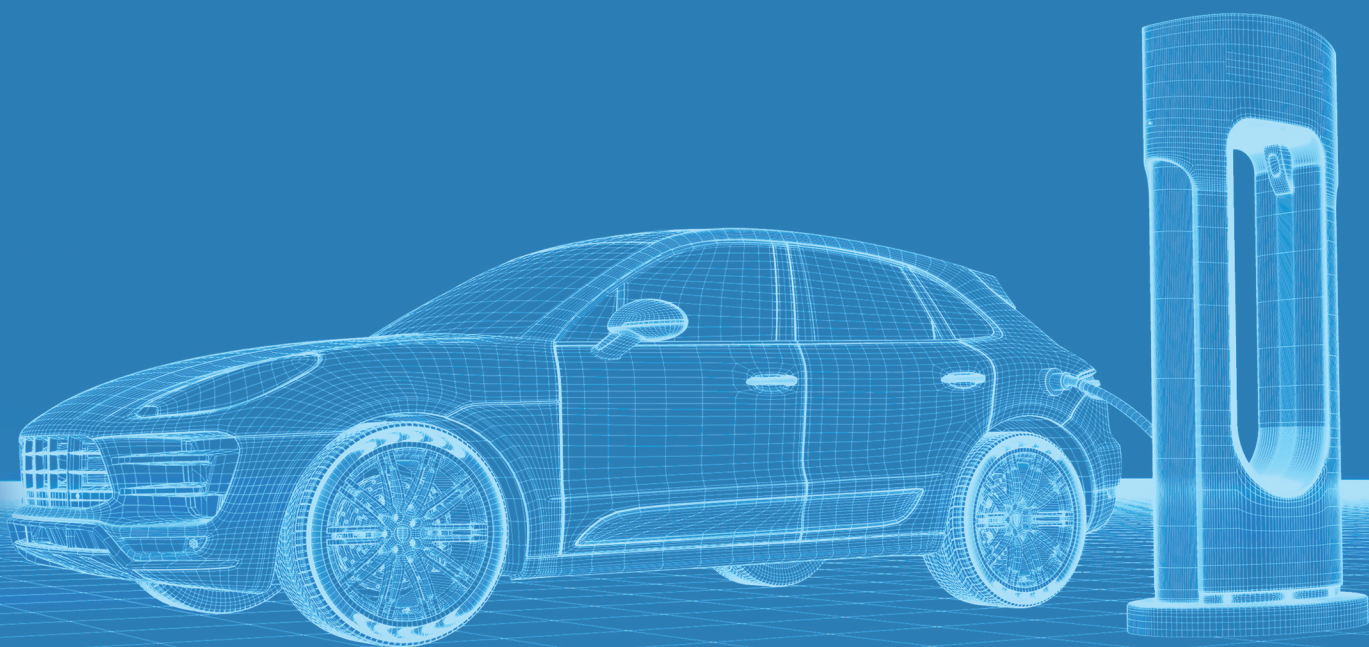




燃料电池系统功率变换器产品手册

Fuel Cell Power Converter Product Manual

公司简介

COMPANY INTRODUCTION



■ 关于纽特

ABOUT US

山东省纽特动力科技有限责任公司, 专注氢燃料电池电气系统配套业务。海归电力电子博士团队, 依托十余年第三代碳化硅半导体应用经验, 掌握氢燃料电池电气系统关键零部件DC/DC功率变换器技术。为氢燃料电池车提供专业电气动力系统的设计, 生产, 销售与维护的系统解决方案。产品涵盖氢燃料电池车DC/DC变换器、空压机驱动、储能及电池管理、高压配电集成多合一体机等。应用市场覆盖重卡、物流车、工程车、无人机、通讯基站、移动备电等。

NEWTEQ DYNAMICS CO., LTD. focusing on supporting business for hydrogen fuel cell electrical systems. Based on ten years of research in the application of third-generation silicon carbide semiconductors, NEWTEQ owns master core technology of fuel cell DC/DC converter. NEWTEQ provide professional electrical power conversion design, production, sales, and maintenance solutions for hydrogen fuel cell systems. The products cover hydrogen fuel cell DC/DC converter, air compressor drive, energy storage and battery management, fuel cell integrated power controller, etc. The application market covers fuel cell large commercial vehicles, engineering vehicles, drones, power generation, mobile backup power, etc.

■ 终端客户

END CUSTOMERS



■ 资质荣誉

QUALIFICATION



NEWTEQ 产品组合

NEWTEQ PRODUCT PORTFOLIO



非隔离型 DCDC 变换器

NON-
ISOLATED
DCDC
CONVERTER

低压自动升降压DCDC
Low voltage buck-boost DCDC



应用: 低压水冷燃料电池系统
Application: low voltage liquid-cooled fuel cell

高压碳化硅自动升降压
DCDC
High voltage SiC buck-boost
DCDC



应用: 高压燃料电池系统、直流充电、特种电力推进等
Application: high voltage fuel cell, DC charging, advanced electric propulsion

小功率DCDC模块
Low power DCDC module



应用: 低压空冷燃料电池系统
Application: low voltage air-cooled fuel cell

隔离型 DCDC 变换器

ISOLATED
DCDC
CONVERTER

隔离型升压DCDC
Isolated high step-up ratio DCDC



应用: 低压燃料电池匹配高压储能系统
Application: low voltage fuel cell to high voltage energy storage system

隔离型降压DCDC
Isolated step-down DCDC



应用: 燃料电池汽车、新能源汽车等控制系统供电
Application: new energy vehicles control power supply

DCAC 变换器

DCAC
CONVERTER

隔离、非隔离双向
DCAC变换器
Isolated and non-isolated
bi-directional DCAC inverter



应用: 燃料电池热电联供, 微网储能
Application: fuel cell power generation, microgrid and energy storage

低压非隔离自动升降压DCDC变换器

DCFF-UD系列

LOW VOLTAGE NON-ISOLATED BUCK-BOOST DCDC CONVERTER



● DCFF系列自动升降压DCDC功率变换器专为低压氢燃料电池应用场景开发。其系列型号功率覆盖3kW~40kW，匹配电压小于200V的燃料电池电堆，常见应用场景如氢燃料电池叉车，观光车，热电联供等。

● DCFF-UD series buck-boost DCDC converter is specially designed for low voltage hydrogen fuel cell application. The power range of this product line is from 3 kW to 40 kW, and they are designed to match the fuel cell stacks which are under 200 V. Typical applications include fuel cell forklift and fuel cell power generation.



功能特点 Characteristics	自动升降压 (V-in与V-out无特定大小关系) Buck-boost (No special relationship between V-in and V-out)				
型号 Model type	DCFF-UD-60LP	DCFF-UD-100LP	DCFF-UD-150LP	DCFF-UD-300LP	DCFF-UD-450LP
最大持续电流 Maximum continous current	60 A	120 A	220 A	320 A	500 A
使用功率范围 Power range	1 kW~4 kW	3 kW~8 kW	6 kW~14 kW	10 kW~25 kW	15 kW~40 kW
输入电压范围 Input voltage range	10 V~180 V				
输出电压范围 Output voltage range	10 V~180 V				
控制模式 Control mode	输入恒流、输入恒流-输出限压、输出恒流、输出恒压 Input CC, input CC-output CV, output CC, output CV				
转换效率 Efficiency	95%~98% (取决于输入、输出端电压比例关系及电流大小) Depends on buck or boost voltage ratio				
辅助输出 BOP channels	无 None	无 None	两路辅助输出, 40 A/路 Two output channels, 40 A/channel		
低压 DCDC集成 DCL integration	无 None	无 None	无 None	2 kW降压隔离24 V DCL 2 kW 24 V isolated DCDC integrated	
其他功能 Other functions	放电 Discharge	输入预充、放电 Input pre-charge, discharge	输入、输出预充、放电 Input & Output pre-charge, discharge		
通讯、控制电压 Communication, power supply	CAN2.0B (隔离)、9 V~36 V Isolated CAN 2.0B, 9 V~36 V				
尺寸 (mm) Volume	213x110x105	285x245x122	280x321x121	376x321x136	430x379x105
重量 (kg) Weight	2.5	6	10	19	28
冷却方式、防护等级 Cooling, protection class	风冷、IP65 Air-cooled				水冷、IP67 Liquid-cooled

高压碳化硅非隔离自动升降压DCDC变换器

DCFF-HVUD系列

HIGH VOLTAGE SiC-BASED NON-ISOLATED BUCK-BOOST DCDC CONVERTER



● DCFF-HVUD系列DCDC功率变换器专为高压氢燃料电池, 电机驱动, 直流充电等应用场景开发。该系列产品应用碳化硅器件实现高功率密度及高转换效率, 最高效率可达99%。

● DCFF-HVUD Series buck-boost DCDC converter is developed for high voltage hydrogen fuel-cell, motor drive and DC charging applications. These products achieve high power density and high efficiency up to 99% due to application of Silicon carbide (SiC) power devices.



功能特点 Characteristics	自动升降压 (V-in与V-out无特定大小关系) Buck-boost (No special relationship between V-in and V-out)			
型号 Model type	DCFF-HVUD-50	DCFF-HVUD-100	DCFF-HVUD-200	DCFF-HVUD-500
最大持续电流 Maximum continuous current	60 A	100 A	250 A	500 A
使用功率范围 Power range	5 kW~12 kW	10 kW~20 kW	20 kW~60 kW	60 kW~150 kW
输入电压范围 Input voltage range	100 V~750 V			
输出电压范围 Output voltage range	100 V~750 V			
控制模式 Control mode	输入恒流、输入恒流-输出限压、输出恒流、输出恒压 Input CC, input CC-output CV, output CC, output CV			
转换效率 Efficiency	96%~99% (取决于输入、输出端电压比例关系及电流大小) Depends on buck or boost voltage ratio			
辅助输出 BOP channels	两路辅助输出, 40 A/路 Two output channels, 40 A/channel			
其他功能 Other functions	输入、输出预充、放电 Input & Output pre-charge, discharge			
通讯、控制电压 Communication, power supply	CAN2.0B (隔离)、9~36 V Isolated CAN 2.0B, 9~36 V			
风冷尺寸 (mm) Volume (air-cooled)	280x321x132		376x321x138	TBD
水冷尺寸 (mm) Volume (liquid-cooled)	308x333x108		404x343x114	TBD
重量 (kg) Weight	9		16	TBD
冷却方式、防护等级 Cooling, protection class	水冷, IP67/风冷, IP65 Liquid-cooled/air-cooled			

小功率空冷燃料电池用自动升降压DCDC模块 DCFM系列

BUCK-BOOST DCDC POWER MODULE FOR AIR-COOLED LOW POWER FUEL CELL



- DCFM系列DCDC模块专为氢燃料电池两轮车、三轮车、便携式发电等小功率空冷电堆应用场景开发。其系列型号功率覆盖200W~6kW, 可匹配输入、输出范围为10V~170V电压平台(氢燃料电池电堆, 锂电池等)。
- DCFM series DCDC power module is specially designed for hydrogen fuel cell bicycle, tricycle and portable power generation. Power range of this product line is from 200 W to 6 kW. They are suitable for low voltage application under 170 V.



功能特点 Characteristics	自动升降压 (V-in与V-out无特定大小关系) Buck-boost (No special relationship between V-in and V-out)		
型号 Model type	DCFm-UD-LT-30	DCFm-UD-0049-60	DCFm-UD-0049-120
最大持续电流 Maximum continous current	30 A	60 A	120 A
使用功率范围 Power range	200 W~600 W	1 kW~2.5 kW	3 kW~6 kW
输入电压范围 Input voltage range	10 V~57 V	10 V~170 V	
输出电压范围 Output voltage range	10 V~57 V	10 V~170 V	
控制模式 Control mode	输入恒流-输出限压、输出恒压 Input CC-output CV, output CV		
转换效率 Efficiency	95%~97% (取决于输入、输出端电压比例关系及电流大小) Depends on buck or boost voltage ratio		
通讯、控制电压 Communication, power supply	CAN2.0B (隔离), 9V~36V Isolated CAN 2.0B, 9V~36V		
尺寸 (mm) Volume	115x70x46	124x115x51	205x125x60
重量 (kg) Weight	0.3	0.65	1.8
冷却方式、防护等级 Cooling, protection class	风冷, 可定制IP67外壳 Air-cooled, IP67 enclosure can be customized		

小功率燃料电池集成式一体化电源管理器 NTFCU系列

INTEGRATED POWER CONTROLLER FOR LOW POWER FUEL CELL SYSTEM



● NTFCU系列电源管理器用于实现小功率燃料电池系统中各个零部件的控制和管理,以确保系统可靠稳定的运行。其功能包括冷却支路管理,数据通讯,故障诊断,电气功率变换等等。NTFCU系列产品基于STM32开发平台,具有较强的运算处理能力和丰富的资源接口。



型号 Model type	NTFCU-20AUI	NTFCU-30AUDI	NTFCU-50AUDI
功能集成 Function	升压DCF/DCL/FCU	升降压DCF/DCL/FCU	升降压DCF/DCL/FCU
DCF 输入电压范围 DCF Input voltage range	0 V~30 V	0 V~60 V	0 V~120 V
DCF 输出电压范围 DCF Output voltage range	30 V ~60 V	30 V~60 V	30 V~120 V
DCF 最大持续电流 DCF Maximum continous current	20 A	30 A	50 A
DCF 最大功率 DCF Maximum power	300 W	500 W	1 kW
DCL 输出电压/电流 DCL Output voltage/current	12V8A/24V4A	12V8A/24V4A	12V8A/24V4A
DCL 通道数量 DCL No. channels	1 channel	1 channel	2 channel
FCU (1)数字控制量:进氢阀;排氢阀;加热膜;风扇pwm x2; Digital control signal: Hydrogen valve (ex & in), heating film, fan PWM x2 (2)数字采集量:唤醒电平;风扇转速x2 Digital sampling: trigger level, fan speed x2 (3)模拟采集量:电堆温度;环境温度;进氢压力;氢瓶压力; Analog sampling: FC temperature, ambient temperature, H2 inlet pressure, H2 tank pressure (4) 通讯:CAN x1, RS485 x1 Communication: CAN x1, RS485 x1			
尺寸 (mm) Volume (mm)	122x75x32	142x75x32	192x128x70
重量 (kg) Weight	0.38	0.75	1.5
冷却方式、防护等级 Cooling, protection class	自然散热、IP67	风冷、IP67	
开发方式 Development Method	(1) 支持只提供底层以及DC 控制 (2) 支持完整系统逻辑开发		

隔离型升压DCDC变换器

DCH系列

ISOLATED BOOST DCDC CONVERTER



● DCH系列隔离型升压DCDC变换器适用于高升压比的应用场景(大于1:5)。该系列产品有宽电压范围,低电流纹波及低电磁干扰等特点。

● DCH series isolated boost DCDC converter is applied to those conditions with high voltage step-up ratio. This product line has characteristics of good galvanic isolation, wide voltage range, low current ripple and low EMC.



功能特点 Characteristics	纯升压 Vout:Vin>5		
型号 Model type	DCH-6	DCH-12	DCH-30
最大持续电流 Maximum continous current	120 A	250 A	400 A
使用功率范围 Power range	2 kW~6 kW	6 kW~12 kW	20 kW~45 kW
输入电压范围 Input voltage range	30 V~180 V		
输出电压范围 Output voltage range	250 V~750 V		
控制模式 Control mode	输入恒流、输入恒流-输出限压、输出恒流、输出恒压 Input CC, Input CC-output CV, Output CV		
转换效率 Efficiency	93%-95% (取决于输入、输出端电压比例关系及电流大小) Depends on buck or boost voltage ratio		
通讯、控制电压 Communication, power supply	CAN2.0B (隔离), 12 V 或 24 V Isolated CAN 2.0B, 12 V or 24 V		
尺寸 (mm) Volume	300x245x126	480x330x87	450x450x110
重量 (kg) Weight	7	15	30
冷却方式、防护等级 Cooling, protection class	风冷, IP65 Air-cooled	水冷, IP67 Liquid-cooled	

低压隔离型降压DCDC变换器 DCLV系列

LOW VOLTAGE ISOLATED STEP-DOWN DCDC CONVERTER



● DCLV系列隔离型降压DCDC变换器专门为氢燃料电池系统, 低速电动汽车等应用场景开发。该产品主要为系统提供12V及24V低压供电。

● DCLV series isolated step-down DCDC converter is specially developed for fuel cell system, low speed EV, etc. This product line is designed to provide 12 V or 24 V power supply for control system.



型号 Type model	DCLV12	DCLV24
额定输出功率 Rated output power	1 kW	2 kW
峰值输出功率 Peak output power	1.1 kW@6 min	2.3 kW@6 min
额定输出电压 Rated output voltage	13.8 V	27 V
使能方式 Enable	CAN使能, 高压输入使能 CAN enable, input-voltage enable	
额定输入电压 Rated input voltage	48 V, 72 V, 96 V, 110 V, 144 V	
输入电压范围 Input voltage range	35 V~150 V	
输出电压范围 Output voltage range	9 V~18 V	20 V~32 V
输出额定电流 Rated output current	75 A	
输出稳压精度 Voltage regulation accuracy	< 150 mV	
效率 Efficiency	> 94%	
工作环境温度 Operating temperature	-20 °C~+65 °C	
模块尺寸(mm) Volume-module	230x160x62	
整机尺寸(mm) Volume	273x174x109	
模块重量(kg) Weight-module	1.5	
整机重量(kg) Weight	3	

高压隔离型降压DCDC变换器 DCHV系列

HIGH VOLTAGE ISOLATED STEP-DOWN DCDC CONVERTER



- DCHV系列隔离型降压DCDC变换器专门为氢燃料电池系统, 乘用车、商用电动汽车等应用场景开发。该产品主要为系统提供12V及24V低压供电。
- DCHV series isolated step-down DCDC converter is specially developed for fuel cell system, passenger and commercial EV, etc. This product line is designed to provide 12 V or 24 V power supply for control system.



型号 Type model	DCHV12-2	DCHV24-3	DCHV24-6
额定输出功率 Rated output power	2 kW	3 kW	6 kW
峰值输出功率 Peak output power	2.2 kW@6 min	3.3 kW@6 min	6.6 kW@6 min
额定输出电压 Rated output voltage	13.8 V	27 V	27 V
使能方式 Enable	CAN使能, 硬线使能 CAN enable, hardware enable		
额定输入电压 Rated input voltage	360 V or 540 V		
输入电压范围 Input voltage range	250 V~750 V		
输出电压范围 Output voltage range	9 V~18 V	20 V~32 V	20 V~32 V
输出额定电流 Rated output current	140 A	110 A	220 A
输出稳压精度 Voltage regulation accuracy	< 100 mV		
效率 Efficiency	> 93%		
工作环境温度 Operating temperature	-20 °C~+65 °C		
尺寸(mm) Volume	273x174x109		305x245x126
重量(kg) Weight	3.5		7

高频隔离双向DCAC变换器 NTAC系列

HIGH FREQUENCY ISOLATED BI-DIRECTIONAL DCAC INVERTER



- NTAC系列是一款高功率密度可并联扩展的双向模块化DCAC逆变器。该产品集成并网切换及孤岛保护功能。
- NTAC is a compact and scalable bidirectional modular inverter with integrated off-grid switching function and island protection.



NTAC-004-006-ISO-LV/HV



NTAC-004-010-ISO-LV/HV

产品型号 Type model	NTAC-004-006-ISO-LV	NTAC-004-018-ISO-LV	NTAC-004-006-ISO-HV	NTAC-004-018-ISO-HV
直流参数 / DC parameters				
额定功率 Rated power	6 kW	18 kW	6 kW	18 kW
额定电压 Rated voltage	60 Vdc		100 Vdc	
额定电流 Rated current	100 A	300 A	60 A	180 A
电压范围 Voltage range	2.5 Vdc~100 Vdc		10 Vdc~450 Vdc	
电流范围 Current range	±100 A	±300 A	±60 A	±180 A
交流侧参数 / AC parameters				
电压体制 Topology	单相三线制 1-ph,3-wire	三相五线制 3-ph,5-wire	单相三线制 1-ph,3-wire	三相五线制 3-ph,5-wire
电压范围 Voltage range	220 Vac±15%	380 Vac±15%	220 Vac±15%	380 Vac±15%
功能 Function	并网, 离网, 并离网切换, 双向 Grid-connected, off-grid operation, grid & off grid switching, bidirectional			
频率范围 Frequency range	50/60 Hz±5 Hz			
功率因数 Power factor	0.99, ≤ 3%			
基本特性 / Basic parameters				
峰值效率 Peak efficiency	≥92%			
正反向切换时间 Bidirectional switching time	≤10 ms			
离并网切换时间 Grid-off grid switching time	≤10 ms			
冷却方式 Cooling	智能强制风冷 Self-adjusted air-cooled			
通讯方式 Communication	LAN*1 , RS485*1 , CAN*2			
外形尺寸(mm) Volume	143x130x415	131x436x540	143x130x415	131x436x540
重量(kg) Weight	8	25	8	25

高压非隔离双向DCAC变换器 NTAC系列

HIGH VOLTAGE NON-ISOLATED BI-DIRECTIONAL INVERTER



- NTAC系列是一款高功率密度可并联扩展的双向模块化DCAC逆变器。该产品集成并网切换及孤岛保护功能。
- NTAC is a compact and scalable bidirectional modular inverter with integrated off-grid switching function and island protection.



NTAC-004-030-NOISO-S/060-F



NTAC-004-060-NOISO-S/120-F

产品型号 / Type model	NTAC-004-030-NOISO-S	NTAC-004-060-NOISO-S	NTAC-004-060-NOISO-F	NTAC-004-120-NOISO-F
交流侧并网参数 / AC parameters(grid-tie)				
额定功率 Rated power	30 kW	60 kW	60 kW	120 kW
输入类型 Rated voltage	三相五线制 3-ph, 5-wire			
电压范围 Voltage range	380 Vac±15%			
电流范围 Current range	±45 A	±90 A	±90 A	±180 A
频率范围 Frequency range	50/60 Hz±5 Hz			
PF&THDi	0.99, ≤5%			
交流侧离网参数 / AC parameters(off-grid)				
电压范围 Voltage range	380 Vac±15%			
电压精度 Voltage regulation accuracy	≤1%			
输出频率 Output frequency	50/60 Hz±5 Hz			
THDu	≤3%			
直流侧参数 / DC parameters				
电压范围 Voltage range	50 Vdc~950 Vdc	50 Vdc~950 Vdc	680 Vdc~1000 Vdc	680 Vdc~1000 Vdc
电流范围 Current range	±100 A	±200 A	±90 A	±180 A
基本特性 / Basic parameters				
峰值效率 Peak efficiency	96%		98%	
正反向切换时间 Bidirectional switching time	≤10 ms			
离并网切换时间 Grid-off grid swiching time	≤10 ms			
工作温度 Operating temperature	-20 °C~+45 °C			
冷却方式 Cooling	智能强制风冷 Self-adjusted air-cooled			
通讯方式 Communication	LAN*1, RS485*1, CAN*2			
外形尺寸(mm) Volume	443x470x129	490x470x129	443x470x129	
重量(kg) Weight	25	27	25	32



山东省纽特动力科技有限责任公司

山东省济南市槐荫区宽禁带半导体产业园B座一层

邮编：250000

商务咨询：关先生 15550036543

技术咨询：耿先生 13953130750

官方网站：www.newteqdynamics.com