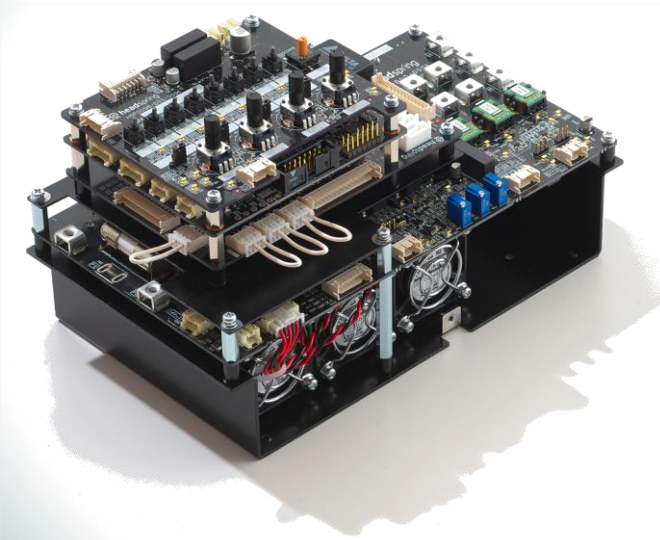
headspring
Sustainable Energy Solutions

Experimental Kit
Three Phase Inverter with SiC Device

HEK-INV-A



Abstract

- Integrated development platform and software for easy startup of power electronics experimental environment
- SiC 3-phase inverter unit, controller, operation board, power supply are connected
- Sample software is downloaded to controller
- Connection and software setting completed
- Sample software including source code

Features

3-phase Inverter with Controller and Operation Board

- ✓ Easy startup by connecting to power source and Load
- ✓ Compact design to save experimental table

Various Circuit Topologies and Parameter Available

- ✓ Chopper, 1-phase inverter, 3-phase inverter are realized by changing operation ode
- ✓ Switching frequency, dead-time, modulation ratio, output frequency can be modified by setting of toggle SW and Volume

Easy Customization of Software and External Option

- ✓ Software can be modified with Headspring's Power Electronics Development Kit "HSDT-KIT-B"
- ✓ Additional Customization Available as Options

Headspring Inc.

Tokyo Front Terrace 8F, 2-3-14 Higashi-Shinagawa, Shinagawa-ku, Tokyo 140-0002, Japan
TEL：03-5495-7957　FAX：03-5495-7958

Specification（Model: HEK-INV-A）

Subject	Specification	Notes
DC Voltage Range	0 V - 400 V	P-N Port
AC Maximum Current	30 Arms	U, V, W Port
Maximum Switching Frequency	200 kHz	Modified w/ Rotary Switch
Minimum Dead-time	200 ns	Modified w/ Rotary Switch
Operational Switch	Toggle SW: 8 ch Rotary SW: 1 ch	
Display LED	Yellow : 8 ch Red : 4 ch Green : 5 ch	
Operation Mode	Chopper 1-phase Inverter 3-phase Inverter	Selected by Switch
Protection	AC Overcurrent DC Overvoltage	Threshold to be modified with variable Resister
Power Supply	AC100 V	
Size	W 215mm D 125mm H 130mm	All the component connected

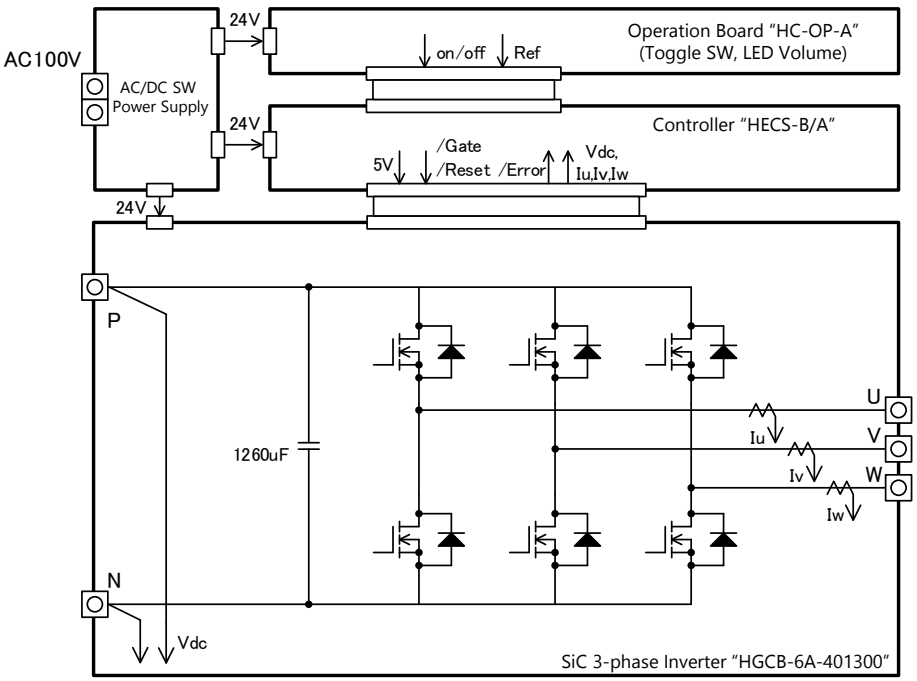
Operational Parameter

Parameters	Description	Notes
Start/Stop	Gate Signal Output Control	
Topologies	Chopper/Inverter	U port for Chopper
	1-phase / 3-phase	U, V Port for 1-phase Output
Modulation	Unipolar Modulation / Bipolar Modulation	For 1-phase output
	Triangular wave carrier comparison modulation / Spatial Vector Modulation	For 3-phase Output
Switching Frequency	10 kHz - 200 kHz	Setting Changed with Rotary SW
Dead-time	200 ns - 600 ns	
Modulation Ratio	0～1	
Inverter Output Frequency	50Hz～500Hz	

Switching Frequency / Dead time Setting

Switching Frequency	Dead-time	Switching Frequency	Dead-time
10kHz	200ns	90kHz	200ns
20kHz	200ns	100kHz	200ns
30kHz	200ns	150kHz	200ns
40kHz	200ns	200kHz	200ns
50kHz	200ns	20kHz	300ns
60kHz	200ns	20kHz	400ns
70kHz	200ns	20kHz	500ns
80kHz	200ns	20kHz	600ns

Block Diagram



＊As of Aug/2017
＊Specification and design subject to change without notice

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