



Universal Energy Conversion System K-ECS Product Information

Description

Kylowave Inc. (www.kylowaveeducation.com) has developed a new way to provide a small footprint energy conversion system for power and mechatronics engineering education. Most systems currently used in these environments are very high power in addition to large size and high cost. Our product is feature-rich, medium power and of industrial quality. It comes with a configurable software that enables the instructor to abstract material not relevant to the course to focus on the parts he is teaching. K-ECS is software-based reflecting today's technology and the actual conditions that graduating engineers will experience in industry. And a price for value ratio that is certain to please.

Customers

University and college undergraduate and graduate courses in power electronics, power systems, control systems, renewable energy and mechatronics

Value to Customers

- A total cost of ownership 3X to 5X lower than existing products
- Flexible platform that can serve many Labs and several courses with the same setup
- Small footprint that can fit existing Labs or accommodate more students per Lab space
- Ruggedized to support students to develop hands-on skills transferable to the industry

Example Applications

Any or all of the following and more from a single device:

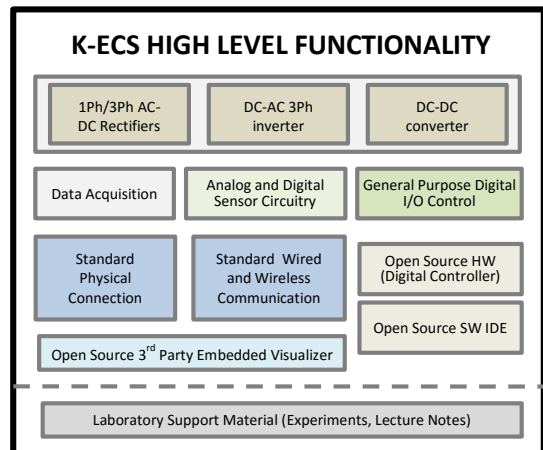
- DC-AC and AC-DC energy conversion
- Buck, boost and buck-boost converters
- Three-phase power inverters
- Theory and control of electrical machines
- Analog and digital control systems
- Position, speed and torque control
- Wind energy generation and control
- Solar energy generation and control
- Embedded systems with data acquisition
- Integration to Matlab/Simulink and LabView

Introducing K-ECS, a communication-enabled, 300W-500W, 12/24/48V universal energy conversion system specifically designed for universities and colleges. K-ECS consists of:



- ✓ DC-AC, DC-DC and AC-DC converters to cover any curriculum in power electronics
- ✓ Embedded digital controllers and filters to allow courses in control systems or enrich power electronics courses
- ✓ Independent converters to support courses in energy management from/to various energy sources and storage technologies

- ✓ An open-source software library of high performance modules developed by Kylowave including PID, MPPT, PWM, filters, data acquisition, etc.
- ✓ Sixteen internal sensors (current, voltage and general purpose) and external sensors through standard I2C and SPI interfaces
- ✓ Arduino-based to open the range of available open source software to support different hardware configurations and different experiments
- ✓ Exporting experimental data to Matlab and Excel for report preparation
- ✓ Attractive pricing.





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Specifications

THREE-PHASE INVERTER	
Input and Output Voltage	Nominal: 12/24/48VDC
Maximum Power	300W
DC-DC CONVERTER	
Input and Output Voltage	Nominal: 12/24/48VDC
Maximum Power	150W
AC RECTIFIER	
Input and Output Voltage	48 VAC(peak) x 1ph and 3ph / 50/60 Hz
Maximum Power	150W
COMMUNICATION INTERFACES	
Standard: USB, I2C, SPI and Bit Stream	
Optional: RS232, WiFi, GSM, Bluetooth, ZigBee or Ethernet	
CONNECTION INTERFACES	
USB Connector: USB 2.0 jack type B receptacle	
Ruggedized interfaces with short-circuit and over-voltage protection	
Medium Voltage: DIN Rails Terminal Blocks Amphenol PCDS connector for 300V, and 32A, compatible with wire gauge 16-28 AWG	
Low voltage and low power: 2X17 positions Molex male socket	
Power Adaptor: 2.1 mm power adaptor jack with positive at the center	
MICROCONTROLLER	
Arduino Mega 2560 (ATmega2560, Microcontroller with 256Kbytes, In-System Programmable Flash)	
PWM MODULATOR	
Switching Frequency: up to 40 kHz	
Control Input Voltage: High impedance CMOS and TTL compatible	
SENSORS	
Sixteen analog channels internally accessible through the embedded processor	
Signal conditioning: Internal low pass filter with differential inputs for high noise rejection	
Two internal PWM-based digital-to-analog converters	
Power inverter voltage sensors: high speed and high accuracy analog to digital converters of 10 bits resolution at 1MSPS. Support two phases simultaneous data acquisition for high accuracy advanced energy and motion control algorithms	
Power inverter current sensors: high speed and high accuracy analog to digital converters of 10 bits resolution at 1MSPS. Support two phases simultaneous data acquisition for high accuracy advanced energy and motion control algorithms	
General purpose sensors: two high-voltage, two low-voltage and two current Sensors	
ENVIRONMENTAL SPECIFICATIONS	
Operating / Storage Temperature	0°C to +70°C / -25°C to +85°C
Humidity	95% RH
Lead Free Compliance	Lead free / RoHS Compliant
PHYSICAL SPECIFICATIONS	
Case Material	Polycarbonate (flammability to UL 94V-0, Rating IP65)
Weight	2.3 lbs
Dimensions	Approximately 8.740" L x 5.748" W x 2.953" H



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Experiments

We provide laboratory experiment manuals in control systems, power electronics, renewable energy and mechatronics. These experiments can be customized for your specific needs. K-ECS, combined with these experiments, provides a turnkey solution to your laboratory teaching needs.

K-ECS Pricing

Please contact us at sales@kylowave.com for latest pricing.

Warranty

Limited hardware one-year manufacturer warranty. Free support for initial setup, training and integration to your existing Lab. Free software and libraries updates.

How to order

To order, please contact
Kylowave Inc.
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(613) 454-1437 ext. 115
sales@kylowave.com

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