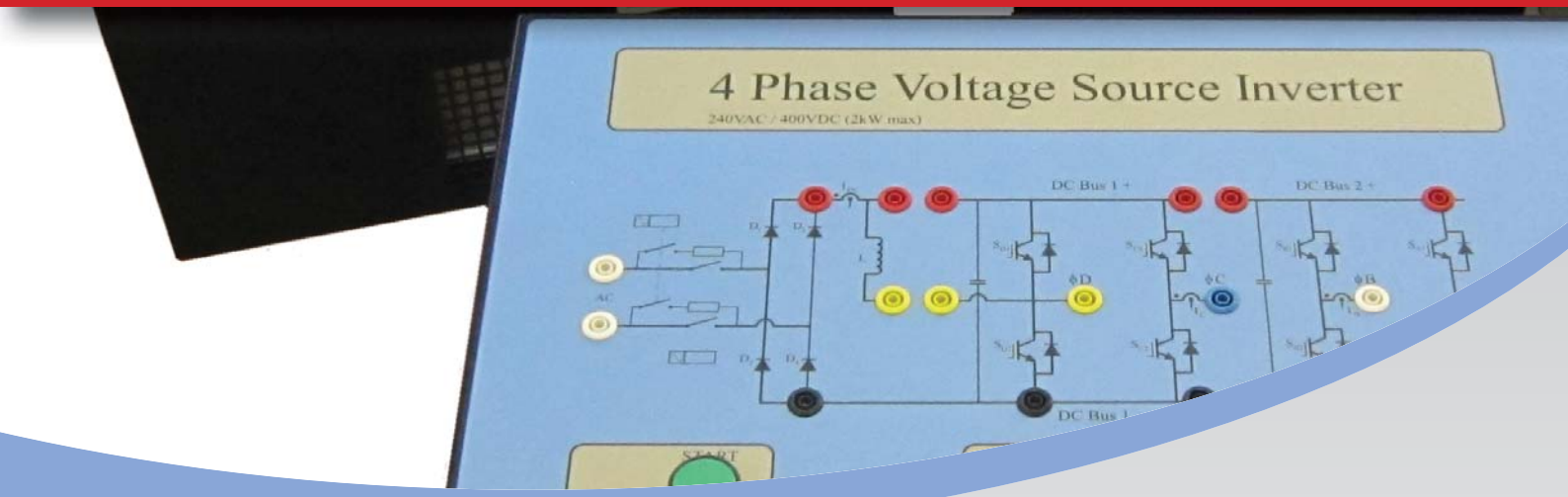
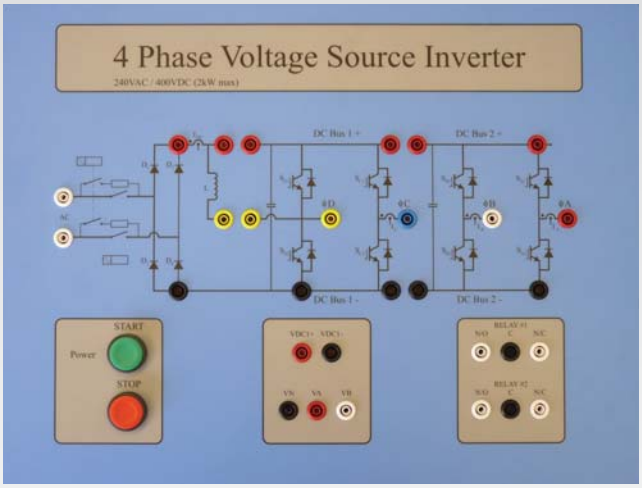
CREATIVE POWER TECHNOLOGIES

# 4 Phase Voltage Source Inverter Test Set



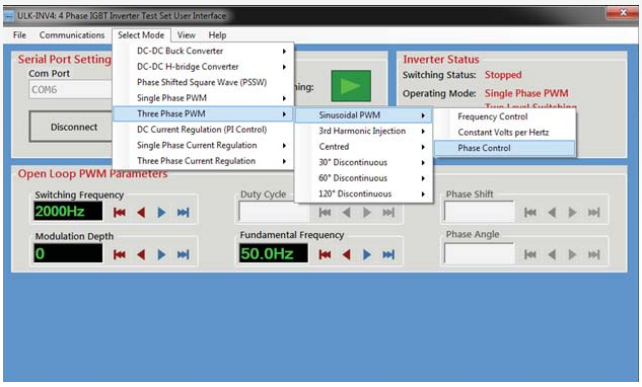




The ULK-INV4 is a 4-phase leg inverter system developed specifically for a Power Electronics teaching environment.

It provides both undergraduate and postgraduate students with an integrated, flexible, digitally controlled low power (2kW) inverter platform.

## Features

- 2kW 4 Phase leg IGBT Inverter
- Designed specifically for Education
- Supports all Major Inverter Topologies
- User Configurable through PC based GUI
- User Selectable Operating Modes
- Built-in Protection
- Programmable for Custom Applications




Graphical User Interface compatible with Windows 7

## Software

- Optimised for a Teaching Environment
- Supported Topologies:

  Buck and Boost Converters, Phase Shifted Square Wave (PSSW), DC/DC Converter, Single, Three or Four Phase Inverters, Closed Loop Current Control
- Isolated USB Serial Interface
- Supplied with Pre-programmed Inverter Software
- Dedicated Windows based User Interface
- Custom Software Support Available

Creative Power can produce custom software variations to suit specific customer requirements.

## Teaching

The ULK-INV4 and ULK-LOD1 platforms provide an extremely flexible and adaptable teaching and development tool for Power Electronic laboratories.

Comprehensive Inverter undergraduate power laboratory experiments are available to API Affiliated Universities at no additional cost. These laboratory experimental notes are based on the existing proven experiments used in the Electrical Engineering teaching program at RMIT University, Melbourne Australia.

The laboratory experiments are available at an additional cost for non-API affiliated Universities.

## Flexibility

Each test set is readily reconfigurable allowing it to be applied to experiments ranging from single device switching circuits to multiphase inverter investigations.

The controller board has a Texas Instruments TMS320F2810 MCU core which can be custom programmed, integrating with standard library support structures (available separately) to provide a stable starting point for additional applications.

## Safety

Safety within the undergraduate laboratory is a vital part of power electronics teaching.

The EPLTS range of products use 4mm shrouded safety sockets for all power connections. In addition, complete galvanic isolation is provided for all user control interfaces.

The Microcontroller and control circuitry is powered independently from the power stage to provide additional protection. This enables inverter switching from near zero voltages up to the inverter's maximum voltage rating.

## Power Stage

| | |
|---|---|
| Configuration | 4 off IGBT Phase Legs |
| Input Voltage | 0 - 265VAC single phase<br>0 - 400VDC |
| DC Bus Voltage Range | 0 - 400V maximum |
| Input Current | 15A (maximum) |
| Switching Frequency | 500Hz - 10kHz (maximum) |
| Power | 2kW, with either single or 3/4 Phase operation |
| Bus Capacitance | DC Bus 1 (1320uF),<br>DC Bus 2 (2970uF) |
| Cooling | Fan Forced |
| Temperature | -5°C to 55°C |

## Control Supply

| | |
|---|---|
| Controller | Independent isolated |
| Input Voltage | 85-265V /50-60 Hz AC input. |

## Control Interfaces

| | |
|---|---|
| Communications | USB (Serial Port Compatible) |
| Programming | JTAG (IEEE 1149.1) |
| Expansion | Unidirectional SPI<br>(Optional) Bidirectional SPI |
| Buttons | Start (Green) / Stop (Red) |

## External I/O

| | |
|---|---|
| Clean Contacts | 2 off Changeover Relays |
| Switched Output | +24V MOSFET (Open Drain) |
| Position Encoder | Isolated TTL Level |

Developed in conjunction with the School of Electrical and Computer Engineering, RMIT University.

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RMIT UNIVERSITY

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