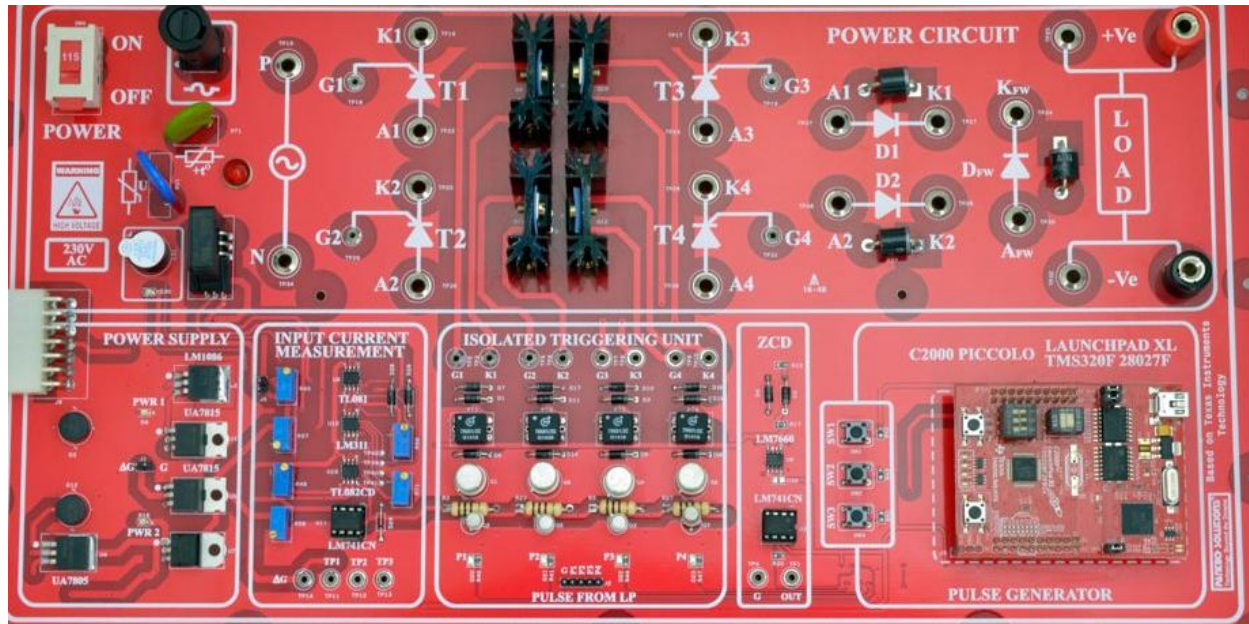


C2000 - Single Phase rectifier trainer kit



This Single Phase rectifier trainer kit integrated with Texas Instrument's DSP help the user to understand complete hardware design of single phase rectifier system on both simulation and hardware. SCR'S were triggered by DSP enabling students to learn how to use DSP for power electronics applications. This kit has a Texas Instruments C2000 PICCOLO LaunchPad with inbuilt Emulator and provides reliable and graphical programming development environment system for power electronics application. Low cost DSP development platform for Power Electronics Application from Texas Instruments.

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What are the challenges we have now?

- Analogue Methods are used to generate PWM.
- DSP training oriented to Power Electronics is not available.
- Limited operation.
- Proprietary Hardware (Manufacturers will not provide complete schematics, Details)
- Students can learn only the Basic Operations
- Students are not exposed to develop control algorithms.

List of Possibilities with TI based PE Kits.

University Syllabus experiments

- Half/Full wave rectifier Circuit with R,RL&RLE
- AC Voltage Control R,RL & Motor
- Cyclo - Converter

Specification

- Input Voltage : 50VAC (230V, AC Compatible)
- Output Voltage : 0-230V DC
- Current : 2A
- Frequency : 50Hz

Features

- Isolated Input Power supply 50VAC (230V/2A) via Step down transformer.
- Input Current Measurement through current transducer.
- Isolated ground.
- 4 No's SCRs with heat sink.
- 3 No's Power Diodes connected to sockets.
- Over Load and Short Circuit Protection.
- Line Synchronization is implemented to generate necessary firing pulses.
- Various test points available to probe the output.
- 3 No's switches are provided to increase or decrease the firing angle (0°-180°).

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- Clear Connection Diagram.
- USB debugging and programming interface via a high-speed galvanically isolated emulator featuring a USB/UART connection.
- Superset F28027 device that allows applications to easily migrate to lower cost devices.
- Nibble (4-bit) wide LED display.
- Two push buttons for user feedback and device reset.
- Easily accessible device pins for debugging purposes or as sockets for adding customized extension boards.
- Boot selection and USB and UART disconnect switches.

Instrumentation needed for experiments

The instrumentation recommended for the execution of the Experiments of this Book is comprised of:

- Inductive load 120mH / 2Amps
- Rheostat load 200 Ohms / 2Amps
- Digital multimeter with 4 1/2-digit resolution
- 100MHz 2-channels Digital Oscilloscope + 2 current probes 20A/50MHz

Research option

- Speed Control of DC Motor with Open & Closed Loop
- Speed control of AC Motor open & Closed Loop
- Researchers can implement various control algorithms (PI, PID, Fuzzy etc)

S.No	List of Experiments
1	Half Wave Rectifier with different load(R,RL&RLE)
2	Semi converter with different load(R,RL&RLE)
3	Full Converter with different load(R,RL&RLE)
4	AC Voltage Controller with different load(R,RL)
5	Cycloconverter with different load (R,RL)
6	DC Motor Speed Control
7	Open Loop controlling Method for DC Motor
8	PI based Closed Loop Control System for DC Motor
9	PID based Closed Loop Control system for DC Motor
10	Fuzzy based Closed Loop Control system for DC Motor
11	Variable Frequency Method based Speed Control of Induction Motor
12	Open Loop controlling Method for Induction Motor
13	Implementation of different pulse generating Methods
14	PI based Closed Loop Control System for Induction Motor
15	PID based Closed Loop Control system for Induction Motor
16	Fuzzy based Closed Loop Control system for Induction Motor

Package Includes

Sl.No	Item Details	(Qty)
1	Single Phase Rectifier Trainer Kit with inbuilt TI LaunchPad	1
2	USB & 5A Power Cable	1 Set
3	50V AC Power Supply Unit	1
4	Patch Cords	10
5	1A Fuse (5*20mm Glass Fuse)	10
6	Printed Manual	1
7	Software CD- Evaluation Version	1
8	10W Bulb	1
9	100W PMDC Motor	1
10	100W ACMotor	1
11	120mH Inductor	1