

Analog PSU & PFC Design Workshop from TI & Biricha



Learn to design and implement stable analog power supplies and PFC stages in just 4 days.

Abridged Workshop Syllabus*

Day 1: Introduction PSU Design, Control Theory, Test and Measurement

- Fundamentals of power supply design
- Bode plots, stability and real life measurement
- Frequency response analysis and impedance measurement
- Labs include:
 - Stable and robust voltage mode PSU design on a Forward type topology
 - Learning how to perform accurate loop measurement and stability analysis using a vector network analyser (each group will have their own network analyzer to use)

Day 2: Peak Current Mode Control

- Peak current design with both legacy ICs and state of the art modern ICs and controllers
- Dealing with sub harmonic oscillations, slope compensation and right hand plane zeros
- Labs include:
 - Designing a stable current mode power supply on Forward/Flyback topologies
 - Current mode controller loop measurement and transient response tests
 - Transformer measurement for snubber design
 - Impact of crossover and phase margin on power supply transient response and stability

Day 3: Isolated Power Supply Design

- Stable isolated PSU design and analysis
- Designing with optocouplers and programmable references (e.g. TL431)
- Characterizing optocoupler bandwidth and the impact on loop stability
- Closed loop opto-isolated compensator design for Type II and Type III
- Labs include: Designing a stable opto-isolated power supply on Forward/Flyback topologies
 - Characterizing your own optocouplers for your power supply's control loop
 - Designing and testing of real life opto-isolated Type II and optoisolated Type III compensators

Day 4: (Optional): Analog PFC Design

- Understanding PFC regulations and meeting specification
- Analog PFC operation and design
- Stable voltage loop, current loop and voltage feed filter forward design
- Labs include: Designing PFC power stage down to component level
 - Design and testing of PFC control loops and voltage feed forward filter
 - Transient response testing and line current harmonic measurement



For full details, please visit
www.biricha.com/aps