DSP-Based, Software-Reconfigurable Laboratory to Nationally Revitalize Electric Drives and Power Electronics Curricula

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•Scope: Power Electronics and Electric Drives are Enabling Technologies, vital for industrial competitiveness, energy conservation and defense.

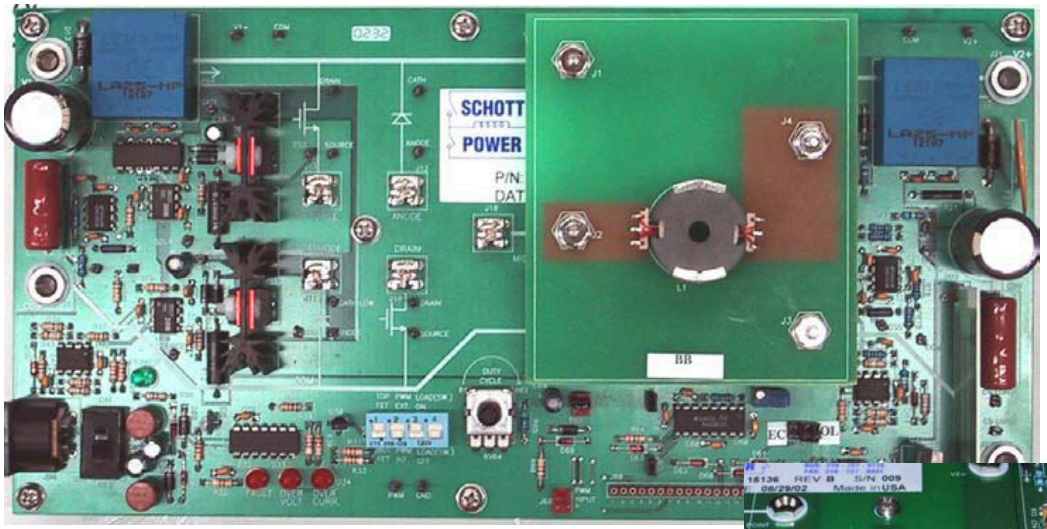
•Goal: Increase the supply of well-trained engineers by revitalizing Power Electronics and Electric Drives undergraduate curricula nation-wide.

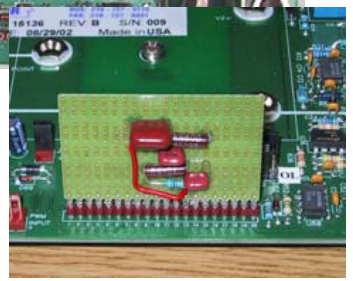
•Outcome: Development and commercialization of the Power Electronics Laboratory and the DSP-Based Electric Drives Laboratory

•Dissemination: Three Workshops in year 2002 and 2003, each with over 100 participants.

•CCLI-A&I proposals: Submitted by 21 universities; additional 43 professors have expressed interest in writing such proposals

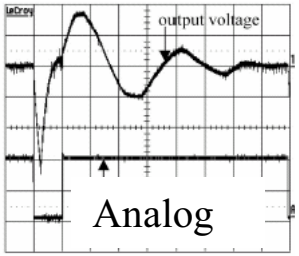
Reconfigurable Power Electronics Lab Board



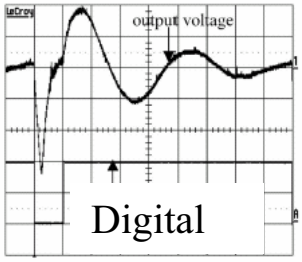


Plug-in controller

•Allows analog/digital feedback control, as illustrated below.

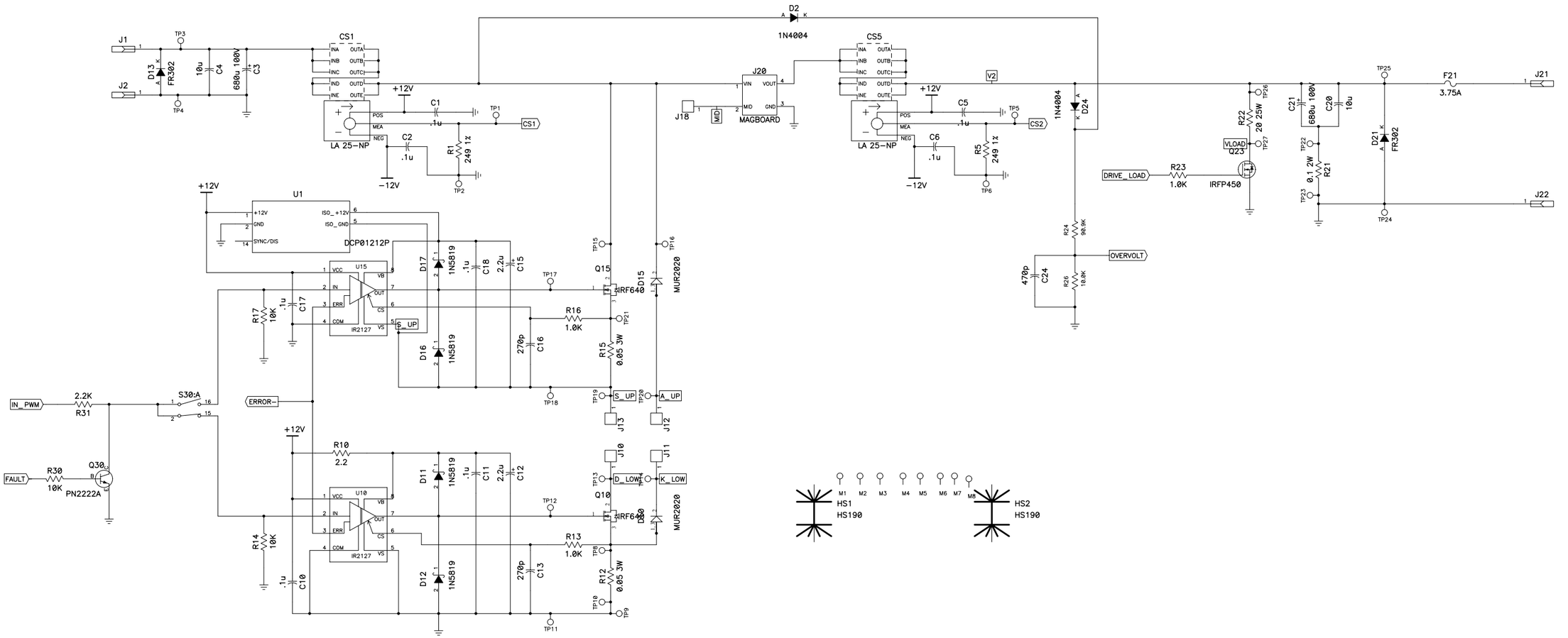


Analog



Digital

Reference: "Restructuring of First Courses in Power Electronics and Electric Drives that Integrates Digital Control" IEEE *Transactions* on Power Electronics, Vol. 18, No. 1, January 2003.



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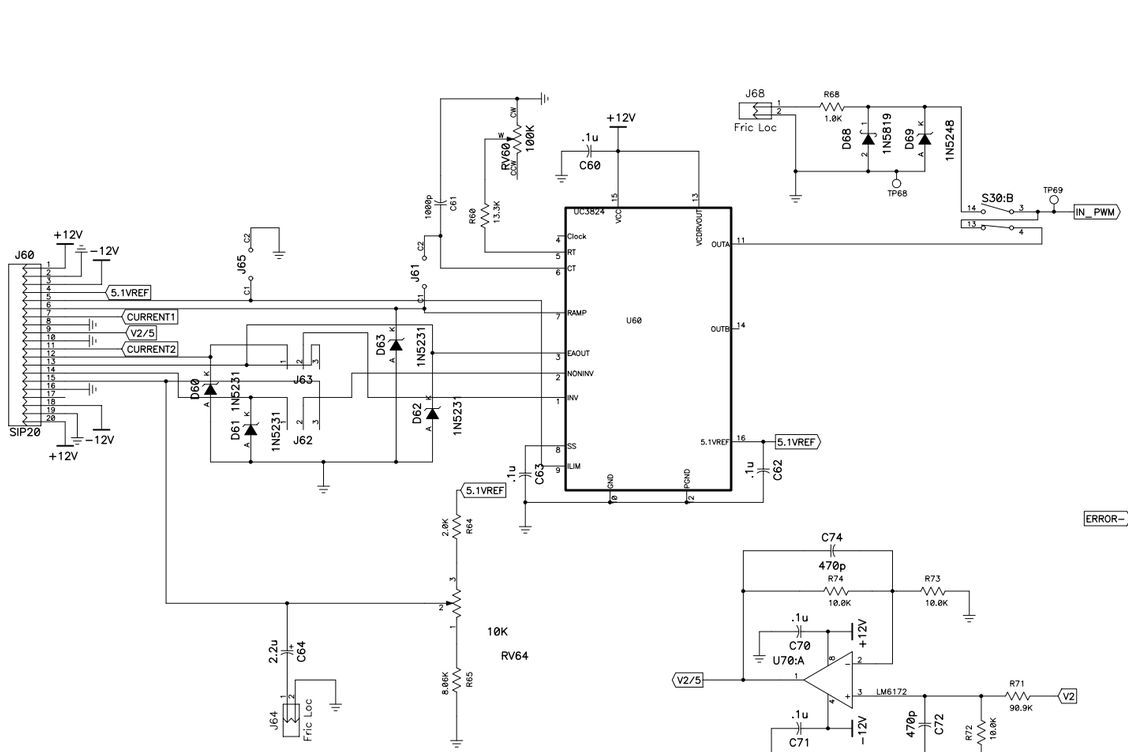

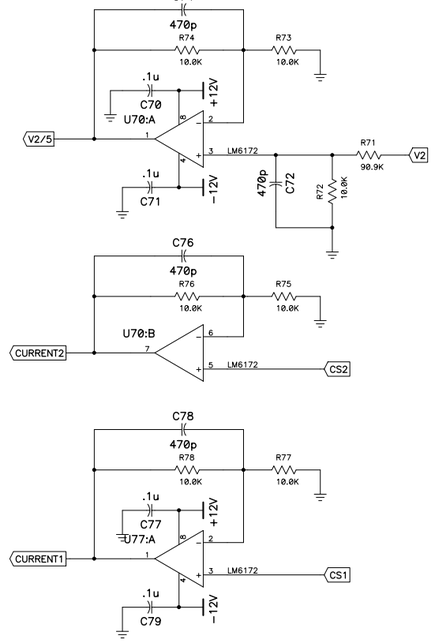

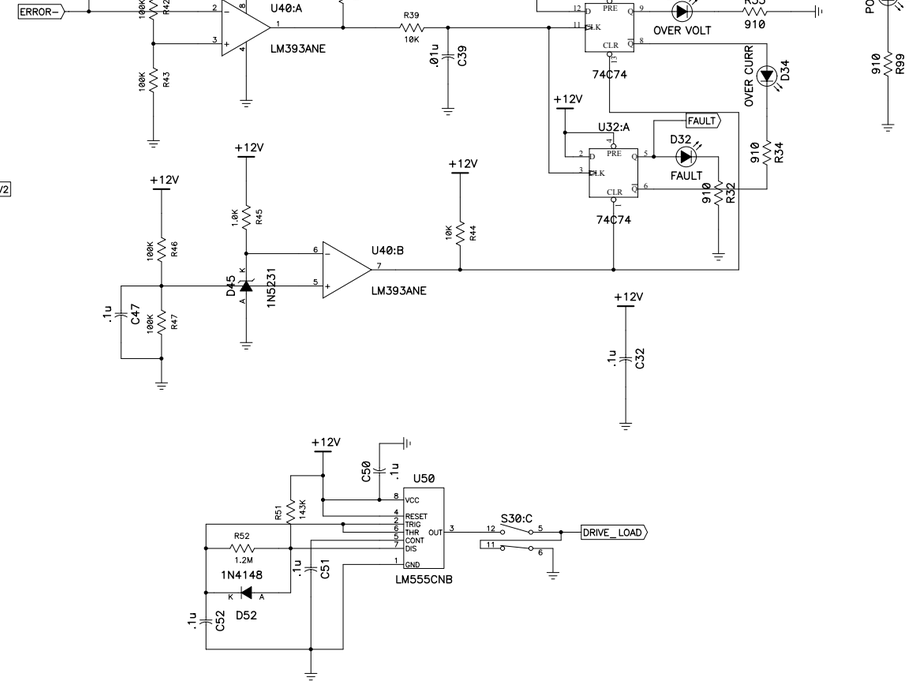

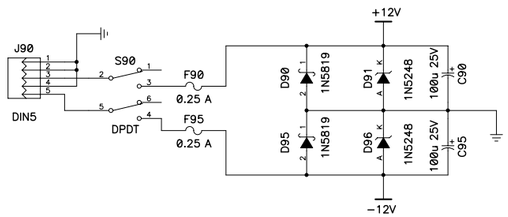

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