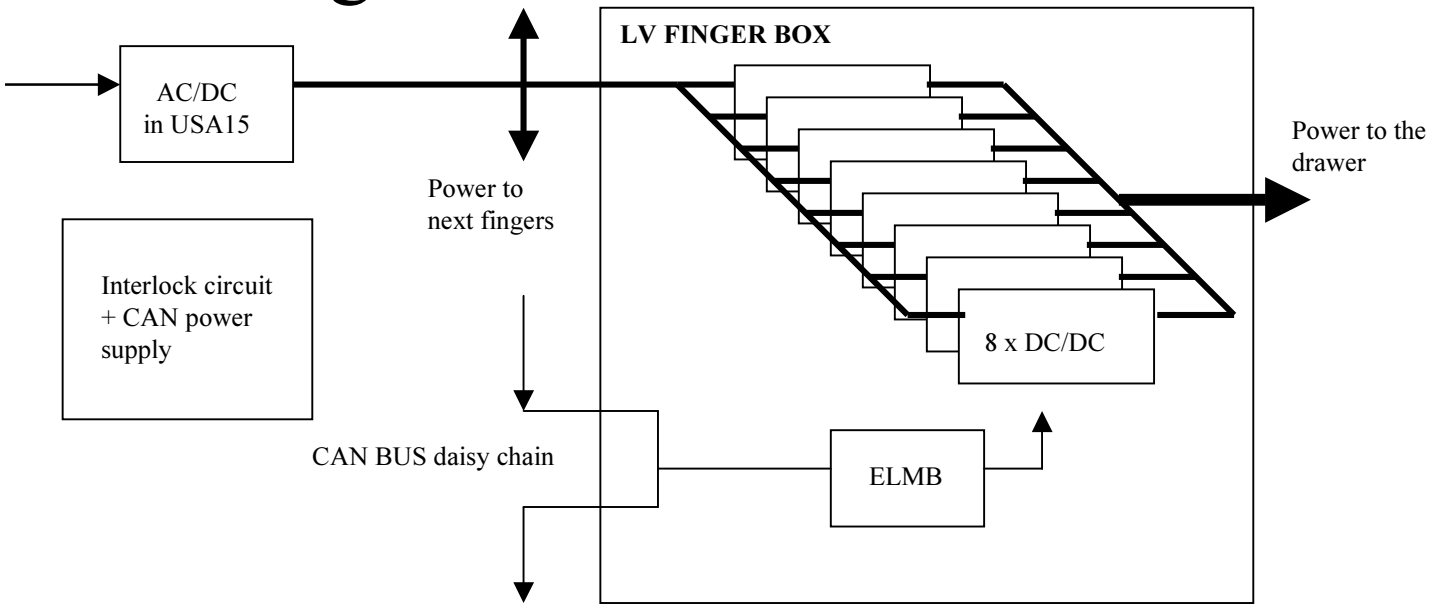
TILECAL brick development

- Projected parameters
  - design should fit the volume 160 x 40 x 50mm to be able to use box from last year with water cooling
  - 3 types of module 3.3V, 5V, 15V
  - output power ~ 200W
  - dissipated power ~ 20W
  - projected efficiency >90%
  - input voltage 200 - 250V (will be verified in PSI)
  - isolated converter equipped by all in/out diagnostics
  - TID 300Gy, NIEL 6.3E12, SEE 1.8E12

TILECAL brick development

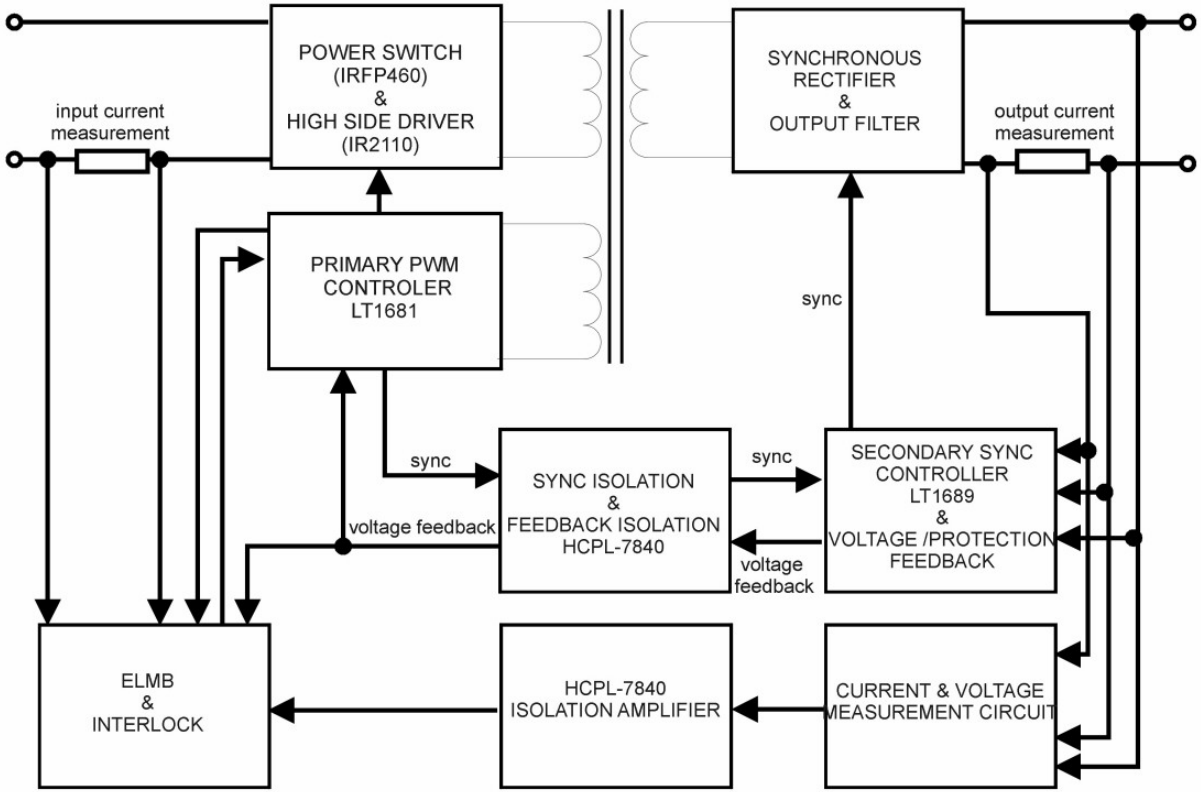
- Block diagram



TILECAL brick development

- Power distribution computed
- Cable estimation prepared

TILECAL brick development



TILECAL brick development

- Schedule of development prepared
  - 2 competitive designs in preparation but by using some common circuits
  - Designs split to blocks for independent tests
  - Optically isolated amplifier (OIA)
    - feedback
    - measurement
    - uses HPCL7840 & LM 6142

TILECAL brick development

- March 2002
  - 2 different designs in preparation
    - Half bridge converter
    - Dual transistor forward converter
  - Transformers design & manufacturing
  - Component ordering
  - Radiation test of OIA in TCC2 in preparation

TILECAL brick development

- April
  - Finished protoboard of half bridge converter
  - OIA protoboard ready and lab tested
  - Installation of OIA in TCC2
- May
  - Preparation of protoboard with forward converter

TILECAL brick development

- Preparation of proto PCBs for SEE test of components
- Started PCB design with SMD components

TILECAL brick development

- Start of TCC2 test
  - after > 7krads OIA without visible changes of parameters
- Started preparation for PSI test facility
  - Run scheduled to 28 - 30 June 2002
  - SEE test of component candidates
  - SEE test of both designs + original design from LT
  - test of OIA
  - projected efficiency >90%
  - input voltage 200 - 250V (will be verified in PSI)

TILECAL brick development

- Conclusion
  - Preparation to PSI test is running
  - Radiation requirements agreed
  - First prototype module in preparation