



Serial Powering Updates

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on behalf of

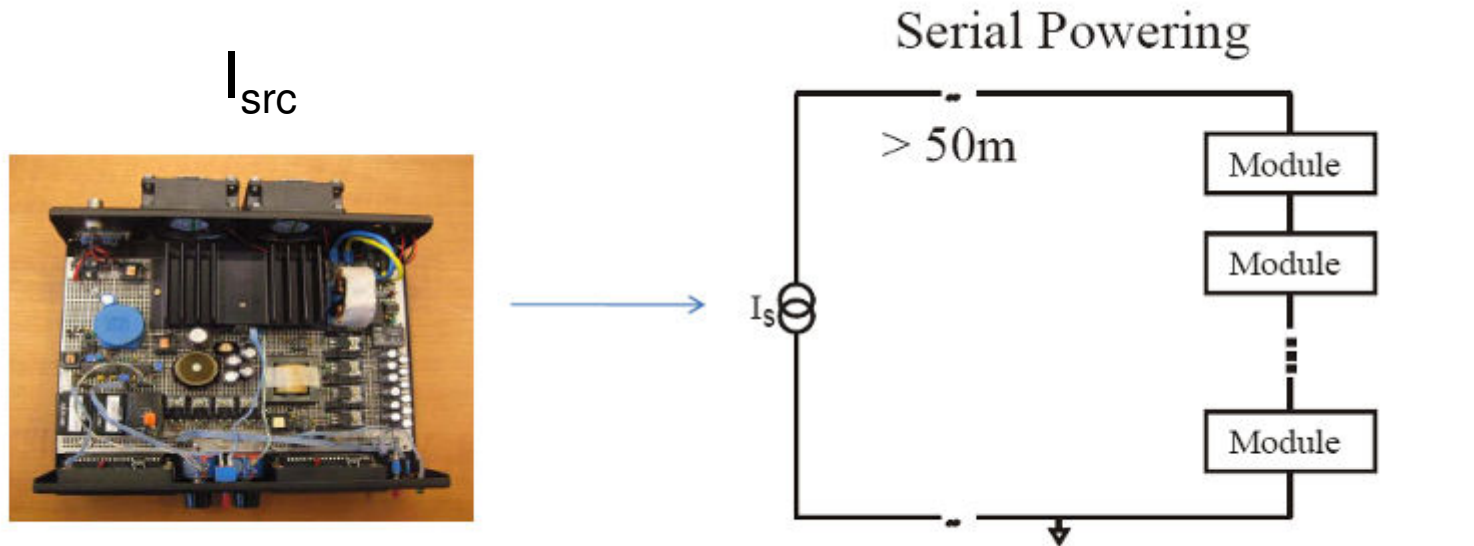
SP Community

STFC

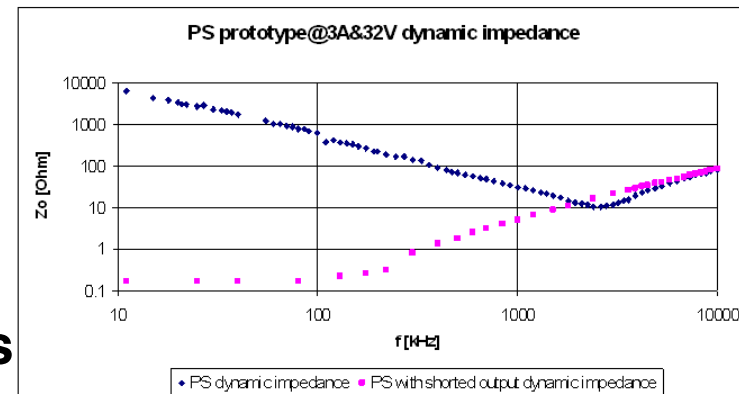
Rutherford Appleton Laboratory

Serial Powering system design

The power to the chain of loads in the SP scheme is provided by a **current source**

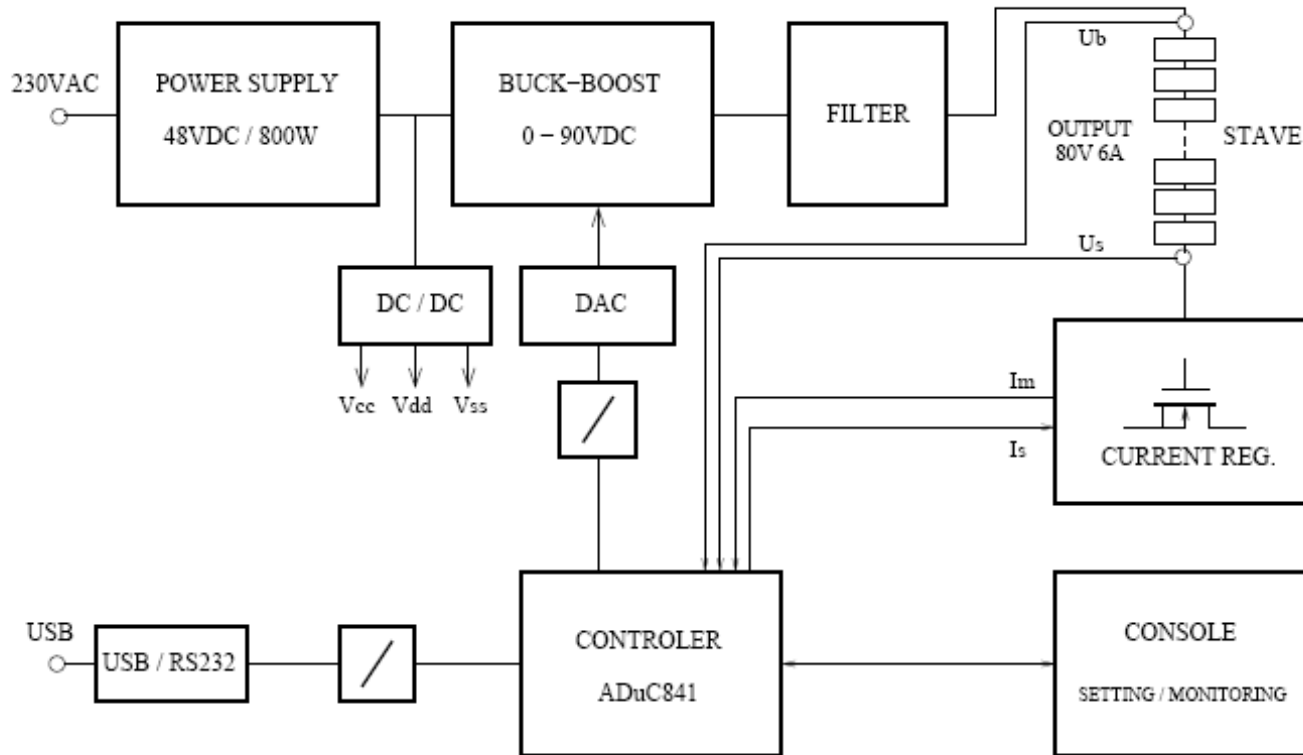


- initially a standard power supply, in protection mode, was used
- a first dedicated **current source (CS) prototype** was designed, built and tested: very good performances (J.Stastny, ASCR)



Serial Powering system design

programmable CS version 2 block diagram



- a more flexible and optimized **programmable CS** has been specified and is being prototyped (J.Stastny, ASCR)
- specifically designed for stave09
- it should work well also for next development involving

Serial Powering system design

Current Source ver.2 specifications:

Input Voltage	90 - 264 VAC
Input Frequency	47 - 63 Hz
Input Power	800 W (max)
Output Current range	0 – 6 A
Output Current Setting Resolution	2 mA
Output Current Settling Time	< 2 ms
Voltage Compliance	0 – 80 V
Voltage Resolution	25 mV
Output Current Ripple (P_k - P_k)	10 mA (estimated max)
Control	Manual / Remote(USB)
Mechanical Dimensions (W x D x H)	305 x 280 x 133 mm



Stavelet construction progress

Liverpool have:

- Built two prototype stave cores (HC, pipes, POCOfoam etc).
- Run cooling trials to gain confidence things are bonded well.
- Done test gluing of bus cables to stave.
- At RAL we expect to have a core with bus tapes etc by mid – late February.
- Tony Affolder is in the process of making the modules for the stavelet. These are also expected mid-late February.

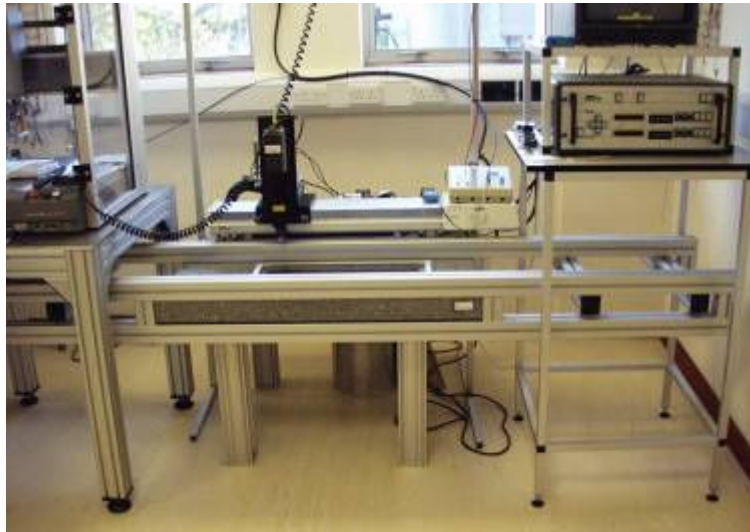
RAL expects to:

- Start placing modules as soon as they arrive and are tested.
- Module mounting tooling is almost complete.
- We have been testing gluing patterns for coverage.
- Appropriate cooling is being put in place.



Stavelet construction progress at RAL

Module placement area



Glue pattern trials
(left - on test board , right – on test bus cable)



Stavelet test box

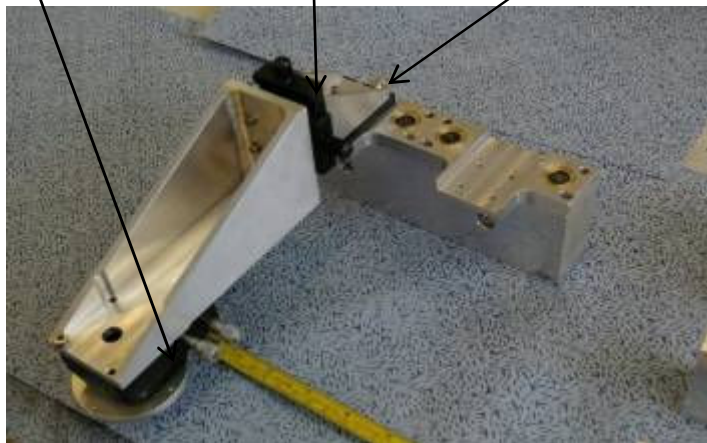


Module placement arm

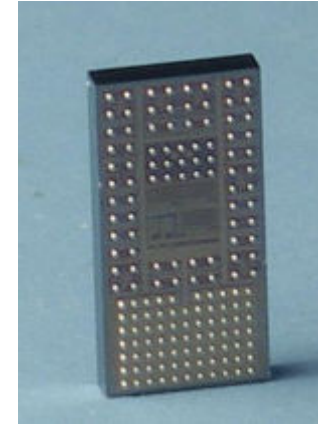
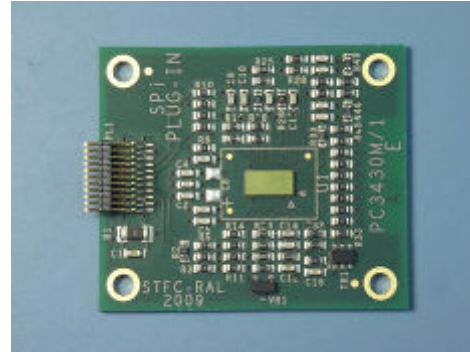
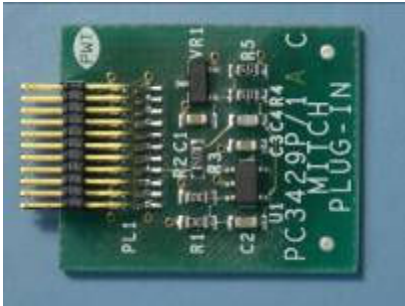
Rotate stage

ZX stages

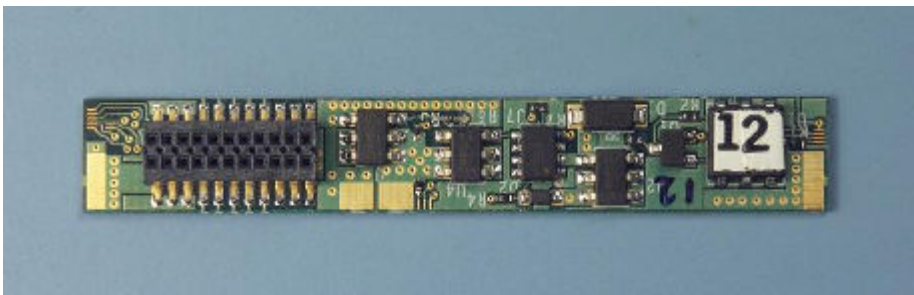
Y stage



Protection board assembly and testing



Plug in boards for testing different serial powering schemes to be mounted onto PPB provided by BNL (received last week)





Conclusions

Latest developments on SP at RAL include:

- Current source ver.2 specification and start of design.
- Setup for Stavelet construction almost ready.
- Protection circuitry (11) delivered from BNL and SPI plugins (2) from IZM; we are now proceeding with their testing and then mounting on stavelets.