

## Motion Control Using EPICS and Galil Controllers

*Mark Clift<sup>1</sup>, Richard Farnsworth<sup>1</sup>, Andrew Starritt<sup>1</sup>, Lou Corvetti<sup>1</sup>*

*<sup>1</sup> Australian Synchrotron Clayton, Vic. Australia  
(In partnership with Motion Solutions Australia)*

A motion controller standard has been developed at the Australian Synchrotron. In partnership with a local Australian company "Motion Solutions Australia" and utilizing Galil Motor Controls and Parker drives a range of multi-axis motion controllers have been designed and manufactured to fully integrate with EPICS. This solution has been successfully integrated across many motion control applications on beam lines, end stations, insertion devices and other heavy equipment. The motion controllers have proven to be very reliable, easy to use and quick to get going.



### Galil EPICS driver:

The Galil EPICS driver interfaces with the motor record and a collection of standard EPICS records. Standard records are used to provide control/monitor interfaces for features that the motor record does not support (eg: gear ratio for synchronised co-ordinated motion). The driver is compatible with all motor controllers in the Galil range and has a native EPICS driver/device layer. (as opposed to an Asyn device layer).

### Unique features:

- Ability to accept and work with user-written Galil code.
- Ability to read two encoders per motor at all times.
- Allows swapping between a "primary" and "secondary" encoders at run time (standard motor record supports only one encoder per motor).
- A generic interface is provided so new functionality can be added to the driver, whilst providing a full EPICS interface.
- Allows master/slave relationships amongst motors.

### Galil Controller Models:

#### MC – 8000

- Based on the 2183 Galil motor controller.
- Eight axis, integrated parker drive system.
- Beamline and end station motors (steppers and servo's).

#### MC – 4000/2000

- Based on 2143/2123 Galil motor controller
- Four/two axis, external drive system.
- Absolute encoder support.
- Insertion devices, and heavy equipment (eg: SAXS/WAXS table).

