Experimental Physics
and
Industrial Control
System

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Subject: **Motion controls alternatives to MAXv?**

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Date: Mon, 16 Aug 2010 23:50:05 +1000

Hi Dirk,

At the Australian Synchrotron we use some Galil controllers and also some PC-104 Turbo PMAC2 boards.

For the Delta Tau PMAC controllers we use an EPICS driver that we sourced from Cosylab simply called "M-Comm". The driver works well, and it just passes strings for commands, and reads motor status over ethernet. The database provided is a collection of standard EPICS records for control and status. Code for each PMAC application is maintained seperately and stored in our repository.   The code is delivered to the PMAC controllers via Delta Tau windows based software. There is no easy interface provided for supplying trajectories to the controller via the "M-Comm" driver, but Delta Tau surely has tools for this ? There is little doubt the PMAC is a complex motor controller, that is particularly well suited for multi-axis coordinated motion such as that required for CNC work. However, much of this power is not required for the accelerator or beamline motion controls, and the extra power just seems to mean extra complication, and manuals that are hard to decipher. Unfortunately, we have also had some cases of unexplained behaviour, resulting in PMAC stack swap out. Also, many communication boards have failed for no apparent reason. At this stage we are considering whether all new applications should use a Galil instead.

With the Galil controllers we use an EPICS driver that is maintained at the Australian Synchrotron. The drivers' EPICS interface is based on the motorRecord, but an interface to standard EPICS records is also provided. The database provided uses the motorRecord for all functionality it supports, and then standard EPICS records are used to provide additional functionality (eg. electronic gear ratio control). Many different motor controllers in the Galil product range are supported, and the RIO_47x00 series is also supported. Code for the Galil controllers can be handled in two ways with this EPICS driver. Either, the EPICS developer can write their own code for the Galil, or they may

use the code generator inside the EPICS driver to build and deliver the required code. At the Australian synchrotron we have many motors using this type of controller, but we have only one application where the Galil code for the application is stored in the repository. For all the other applications that we have, the Galil code is handled by the code generator within the EPICS driver. Generic interfaces are provided in the driver, so that the developer can easily connect their own Galil commands, to EPICS records. There is no interface in the EPICS driver for delivering trajectories, but Galil provide tools for this, and the EPICS driver can monitor at the same time. The Galil controllers are not as sophisticated as the PMAC controllers and perhaps are not as configurable. However, Galil controllers are far easier to use and the documentation is fantastic. Only one hardware failure has been recorded, and that was because excessive voltage was connected to the board. We have had no cases of unexplained behaviour.

Cheers,

Mark Clift.

Replies:
RE: Motion controls alternatives to MAXv? *Mark Clift*

ANJ, 02 Sep 2010

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