

Volume 5, Number 19, November 13, 2003

Welcome to the Design News E-Update just for motion control. This monthly email newsletter keeps you updated with original, breaking information on motion control by the editors of Design News magazine.

Multi-axis controller simplifies connections in distributed networks

Bus-based central controllers can't always be close to the action. Consider a central controller that manages the motion of multiple machine axes that are widely dispersed on the plant floor. In this case, the computer containing the central control card can't be close to all the axes. So distance will complicate at least some of the connections, which are made by running long wires between the controller and the distant axes.

To reduce distance-related connection troubles, Galil Motion Control Inc. <http://email.designnews.com/cgi-bin2/DM/y/eeNa0GWIEN0DcL0BuPR0Aj> has introduced an alternative to central control of multiple dispersed axes. The company's DMC-31x3 distributed controllers aren't restricted to PC bus slots. Instead, these card-level controllers can be placed close to far-flung axes, simplifying connectivity and reducing wiring.

Distributed control arrangements aren't new, but they normally rely on single-axis motion controllers. By contrast, the DMC-31x3 can control up to eight axes. The idea is "find the axes that are close together and gang up [the controllers for those axes] on one board," explains Lisa Wade, Galil's vice president of sales and marketing.

Why? On a per-axis basis, Wade notes, a single card with multiple controllers costs less than distributed systems comprised of single-axis controllers on separate PC boards.

Depending on the location of the axes, users can employ a variety of DMC-31x3 combinations. For instance, an eight-axis application might include two DMC-3143 four-axis controllers, four DMC-3123 two-axis controllers, or two DMC-3133 three-axis controllers and one DMC-3123 two-axis controller.

DMC-31x3 controllers are designed for Ethernet-based operation. Ethernet was chosen over other network options because of its low cost and popularity, according to Wade.

Besides reducing network wiring, the DMC-31x3 can free the host computer from burdensome motion coordination duty, overseeing tightly coupled movements of axes in its vicinity. The unit can further reduce the host's workload by serving as the network's master controller. After receiving motion commands from the host, the master controller disperses them to the other DMC-31x3 units in the network. Equipped with a 32-bit Motorola microprocessor, the intelligent DMC-31x3 needs only periodic high-level commands from the host.

"We look at the host computer as the supervisor of the whole [operation]," Wade says. "You don't want the supervisor to also be the worker. You want the motion controllers to do the work."

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