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SERVOTRENDS

GALIL
WE MOVE THE WORLD

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Galil Announces *New* Software Drivers for PCI, ISA and USB Controllers

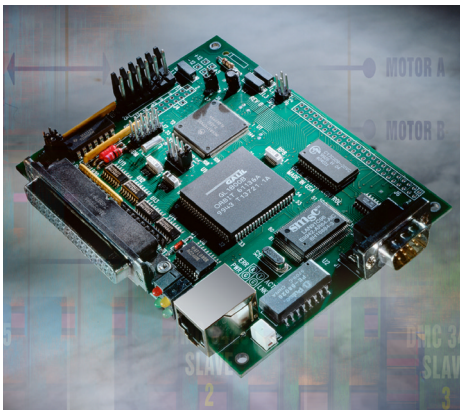
Galil has developed new software drivers (version 4.0) for its line of PCI, ISA and USB motion controllers. Available for Windows 98SE, ME, 2000, XP, and NT4, these drivers offer greater robustness and enhanced plug-and-play than prior versions. In addition, the Install procedure is easier and faster than before. This enables the user to install the new software and reboot with their controller installed inside the PC.

Software Driver Name	Interface	Operating System
GLWDMPCI.sys	PCI	98SE, ME, 2000, XP
GLWDMISA.sys	ISA	98SE, ME, 2000, XP
GLWDMUSB.sys	USB	98SE, ME, 2000, XP
GALILPCI.sys	PCI	NT4
GALIL.sys	ISA	NT4

DMC-3425 Ethernet Distributed Controller Now Enhanced With *New* Commands

Galil's already powerful DMC-3425 controller now features several new commands designed to quickly and easily configure master and slave controllers for the Ethernet. One of the new commands is called HC Handle Configuration. It makes all Ethernet connections and initiates communications to all slaves. Plus, this single command alone replaces what was previously done in 10 commands.

Other new commands include TH Tell Handle and TZ Tell Slave I/O, which are useful in troubleshooting; and the HR Handle Restore command, which restores a handle if it is dropped. The HS Handle Switch command will reassign handle designations.



The DMC-3425 two-axis controller is designed to be part of an Ethernet distributed control system. One DMC-3425 is configured as a master and can communicate with up to three other DMC-3425 controllers that are configured as slaves. The master DMC-3425 receives all commands from the host PC, freeing the host computer from the time-intensive task of commanding each controller in a distributed control system. Since each DMC-3425 is placed close to its respective motors and drives, the system wiring is reduced.

Call Galil at **800-377-6329** for more information.

Prices Reduced for DMC-2100 Series!

Due to increasing demand for the DMC-2100 series Ethernet controllers, Galil had been able to reduce manufacturing costs. As a result, we are pleased to pass these savings on to you for controllers with 3 to 8 axis. The cost for 1 and 2 axis controllers remains at their already low price.

Model Number	#Axis		
DMC-2110	1-axis		
DMC-2120	2-axis		
DMC-2130	3-axis		
DMC-2140	4-axis		
DMC-2150	5-axis		
DMC-2160	6-axis		
DMC-2170	7-axis		
DMC-2180	8-axis		

New High Speed, 100Base-T Option Now Available for Galil's Ethernet Controllers

Galil's Optima Series Ethernet controllers now come available with the high-speed 100Base-T option. For example, Galil's new DMC-2200 series has all the high performance features of the popular DMC-2100 series but with enhanced Ethernet speed. This enables the controller to send and receive data packets 10X faster than 10Base-T.

In addition, the DMC-2200 includes an auto-negotiate function that allows the DMC-2200 to communicate with either 10Base-T or 100Base-T, full or half duplex devices.

Also like the DMC-2100, the DMC-2200 series is available in one through eight-axis versions and is configurable for step or servo motor control for any combination of axes. Standard features include PID control with velocity and acceleration feedforword and notch filter parameters, non-volatile memory for storing multiple programs, multitasking for concurrent execution of eight programs, I/O capabilities including 64 programmable digital inputs and outputs, eight uncommitted analog inputs and high speed position latches. It also accepts encoder inputs up to 12 MHz and operates stepper motors up to 3 MHz.

Galil's new DMC-2200 100Base-T Ethernet controllers are available now for immediate delivery. They are priced $100 higher than the DMC-2100 10Base-T series (see pricing in DMC-2100 article above). Contact Galil at **800-377-6329** for more information.

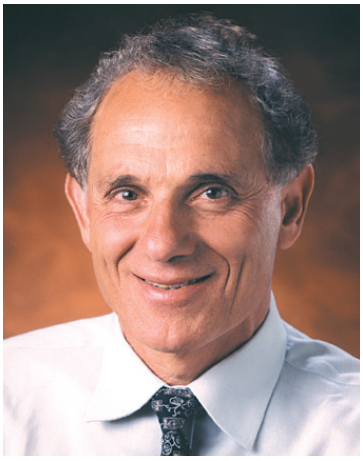


For Your Convenience, Purchase Galil Products Either Direct Or Through an Authorized Distributor

To ease your purchase process, Galil's motion control products are now available to buy either directly from Galil or through a network of factory-trained distributors. To order direct from Galil, just fax your signed company purchase order to **916-626-0102.** Orders are confirmed via fax, within 24 hours and are typically shipped within 5 business days.

If you prefer, you can place your order with an authorized Galil distributor. We have recently authorized several new distributors throughout the United States, so please consult **http://www.galilmc.com/contact/distributors.html** for the location of the distributor nearest you.

Jacob Tal To Conduct Motion Control Seminars In Silicon Valley and New England



Jacob Tal, the preeminent authority on motion control, will personally conduct his acclaimed motion control seminars this Fall season. Both the half-day *Basic Seminar* and full-day *Advanced Seminar* will be offered in the Silicon Valley and Boston. In addition, Galil's two-day *Product Workshop* will be conducted at Galil headquarters in Rocklin, California. Course summaries, pricing and locations are detailed above:

Motion Control Made Easy

Half-day (4 hours) $79

- **Mon. 10/1/01 Santa Clara, CA**
- **Mon. 10/15/01 Hartford, CT**
- **Tues. 10/16/01 Boston, MA**

This Basic introduction on how to successfully implement motion control systems covers such subjects as selecting system elements, servo tuning, programming and application examples. Also available on video and as a web-based training course.

Advanced Motion Control

Full-day $150

- **Tues. 10/2/01 Santa Clara, CA**
- **Wed. 10/17/01 Boston, MA**

Attendees will gain in-depth, advanced knowledge of motion control systems to ensure outstanding controller performance. Topics include dual-loop control, notch filter, and tension control. Completion of the ***Basic*** course is a prerequisite.

Product Workshop

Two-days $250

- **Thur. 9/13/01 and Fri. 9/14/01 Rocklin, CA**

Users of Galil motion controllers will gain detailed understanding about connecting system elements, tuning, motion programming and trouble-shooting. They can test their application on actual hardware and review it with Galil specialists. Attendees must have purchased and/or used a Galil controller.

Over 10,000 engineers have attended Jacob's seminars to gain and expand their motion control knowledge and to increase their productivity. Your complete satisfaction is guaranteed or your money back. Call Galil at **800-377-6329** to reserve your seat or register on-line at **www.galilmc.com/training/seminars.html.**

Hurry! Register by September 7 and get $10 off! Enrollment is limited. If a live seminar isn't held near you, the half-day seminar is available on video or as a web-based training course.

The Control of Ultrasonic Motors *By Jacob Tal*

Recent years have seen the development of a new type of actuator: the ultrasonic motor. With these, the motion is generated by a piezo ceramic device, which is vibrated such that it pushes a slide sideways. This results in unrestricted motion of the slide, performed by a non-magnetic actuator.

The most dominant feature of the ultrasonic motor is its high level of friction which, typically, can be as much as 20% of the drive capability. The friction has one advantage in that once the motor gets to the final position and the control is shut off, the load remains in place due to the holding friction.

On the other hand, the large friction can be a problem because it takes longer to reach the required position precisely. Even worse, if the motor overshoots the target, it takes a relatively long time before it can reverse direction and correct the error.

In order to help users control such motors, Galil has collaborated with Nanomotion, the leading manufacturer of ultrasonic motors, to develop some features to help with the control. These include:

1. Anti-friction compensation—User selects positive and negative levels of bias. These bias levels are added to the command signal by the controller according to the polarity of the position error, thereby reducing the effect of friction.

2. Fast deceleration—To avoid overshoot, user can select a negative velocity feedforward signal during the deceleration phase. Such a signal results in a greater deceleration rate that prevents overshoot. Also, note that the feedforward signal is open loop and, therefore, does not affect the system stability.

3. In-target shutdown—User defines a range of positions with acceptable errors, i.e., ± 2 counts. When the motor comes to a stop and lands within the acceptable range the controller shuts off, thereby assuring no motion. A larger range, i.e., ± 4 counts, can be defined as the correction range. If the position error exceeds this range, the controller comes alive and drives the actuator back into the acceptable range.

Galil can add some more features, such as two sets of PID, and friction mapping for better accuracy.

Delivering the Best Value in Motion Control

Galil Motion Control provides the best value in high performance motion controllers by guaranteeing the industry's lowest prices in minimum quantities of 100. Galil controllers are ready for a wide range of applications from simple point-to-point positioning to complex coordinated motion using multiple axes. The product line is comprised of packaged, industrial controllers; advanced, multi-axis card-level controllers; and economical, single-axis controllers. Galil also provides accessories that enable you to complete your project quickly. These include software design tools for quick and easy setup, tuning and analysis; and servo amplifiers, motors and encoders. With over 200,000 controllers in the field, Galil is truly the leading supplier of motion controllers.

Optima Series–Highest Performance

1-8 axes. Program memory, multitasking, up to 64 configurable I/O, sinusoidal commutation.

DMC-2100 Series. Ethernet, RS232
DMC-2000 Series. USB, RS232
DMC-1800 Series. PCI bus
DMC-1700 Series. ISA bus
DMC-1600 Series. CompactPCI bus
DMC-13x8 Series. VME bus
DMC-1200 Series. PC/104 bus

Econo Series–Single Axis Controllers

DMC-1410. ISA bus
DMC-1411. PC/104 bus
DMC-1412. RS-232
DMC-1417. PCI bus
DMC-1415. Ethernet, RS232
DMC-1416. Ethernet with amplifier
DMC-1425. Ethernet, RS232, 2 axes
DMC-18x2. PCI bus, 1-4 axes

E-Series–Ethernet Distributed Controllers

DMC-3425 Ethernet. 2 axes

Software Tools

Drivers for DOS, QNX, Linux and all current versions of Windows™. Includes terminal emulator.

WSDK. Servo tuning and analysis software including a 4-channel storage scope for display of motion.

ActiveX™ Toolkit. Custom controls for Visual Basic®or other ActiveX software.

C-Programmers Toolkit. Provides the flexibility and control of programming in C/C++. C libraries and functions.

CAD-to-DMC Translator. Translates an AutoCAD® DXF file into a DMC controller file.

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Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

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