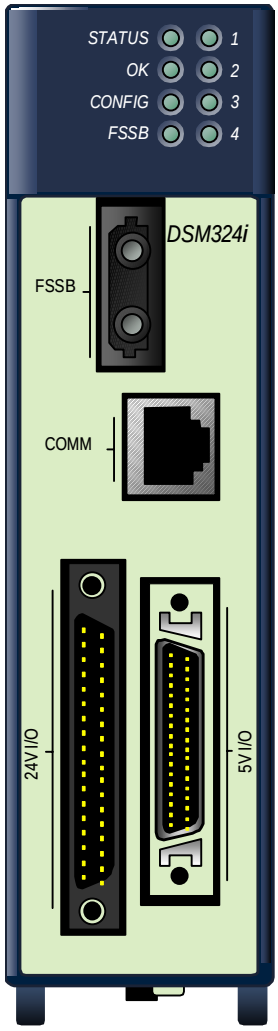
# PACSystems™ RX3i and Series 90™-30

## IC693DSM324-BE/IC694DSM324-BE

## DSM324i Motion Controller

*GFK-2354F*
*May 2010*




The DSM324i module can control up to four αi or βi-series digital servos. This controller also supports high speed Local Logic that allows the DSM to perform limited logical decisions and math synchronous with the position loop update rate. Local Logic supports high-speed digital output control synchronous to axis motion. The module provides an electronic CAM Follower Function that allows the module to be used in many applications traditionally supported by mechanical cams.

### *Product Documentation*

*DSM324i Motion Controller for PACSystems ™ RX3i and Series 90 ™-30 User's Manual,* GFK-2347
*Servo Product Specification Guide*, GFH-001F or later
*Important Product Information (this document),* GFK-2354F

## *Release Information*

Release 1.61 of the DSM324i Motion Controller firmware prevents PLC Loss of Module faults that sometimes occur when the Parameter Load COMM_REQ function block is used. For details, see “Problems Resolved by this Revision of Product” on page 2.

### *Release History*

| ***Catalog Number*** | ***Firmware Version*** |
|---|---|
| IC693/694DSM324-AE *and later* | 1.61 |
| IC693/694DSM324-AD | 1.60 |
| IC693/694DSM324-AC | 1.50 |
| IC693/694DSM324-AB | 1.10 |
| IC693/694DSM324-AA | 1.00 |

### *Upgrades*

IC693DSM324-Ax modules are field upgradeable to IC693DSM324-xE and IC694DSM324-Ax modules are field upgradeable to IC694DSM324-xE using the firmware upgrade utility.

The firmware upgrade kit **44A750894-G05** can be ordered from GE or downloaded at no charge from the Tools and Support section of http://www.ge-ip.com/support

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# Functional Compatibility

### CPU Version Requirements

Use of DSM324i firmware version 1.61 or higher requires PACSystems Rx3i firmware release 2.8 or later or Series 90-30 CPU firmware release 10.0 or later.

### Programmer Version Requirements

Use of DSM324i firmware version 1.61 or higher requires Machine Edition Logic Developer – PLC Version 5.0, Service Pack 2 or later. The DSM324i is not compatible with Logicmaster 90, Control, VersaPro or the DOS-based Motion Programmer (IC641SWP065).

# Problems Resolved by this Revision of Product

### DSM324 Loss of Module after Parameter Load COMM_REQ

In earlier versions of the DSM324, the Parameter Load COMM_REQ described in the *DSM324 Motion Controller Users Manual* Appendix B, Section 4 can sometimes cause a PLC Loss of Module fault. This problem has been corrected in firmware release 1.61.

# Restrictions and Open Issues

### DSM324 may allow Jog beyond EOT limits if software EOT limits are set equal or close to High / Low Position Limits

The DSM324 may allow Jog beyond the configured Software EOT Limits if Jog is commanded with the Enable Drive %Q bit off and the software EOT limits enabled but set equal or close to the High / Low Position Limits. If the Enable Drive %Q bit is on while Jog is requested, Jog will always stop at the appropriate EOT limit. If the Software EOT Limits are less than the corresponding High / Low Position Limits by an amount equal to the maximum servo position error, Jog will always stop at the appropriate EOT limit.

### DSM324 path generator can run at velocity slightly greater than programmed velocity

This issue occurs only when the acceleration time is greater than 65535 path generator samples (32 - 262 seconds depending on axis configuration and acceleration mode). When the problem occurs, the velocity can only be off by 0.0015 percent of the programmed value.

### DSM324 External Quadrature Encoder configuration produces no invalid configuration error when Feedback Mode is Absolute

The DSM324 firmware does not support absolute mode external encoders. If the Axis Feedback Source is configured as Ext Quadrature Encoder, the encoder is treated as incremental even if of the Feedback Mode is configured as Absolute.

### DSM324 servo jumps when servo re-enabled after amplifier E-Stop

When a servo is moving and the amplifier E-Stop input is opened, the servo immediately stops. When the E-Stop (C0) error is cleared, re-enabling the amplifier may cause the servo to jump even though the DSM is commanding zero velocity. Under this condition the servo jump may be a fraction of a revolution or more than one revolution. To prevent the servo from jumping, cycle 24v control power on the servo amplifier before re-enabling the servo.

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# Operational Notes

## *Follower Disable and Abort Operation*

When the follower function is active, The DSM ABORT %Q bit **DOES NOT** disable the follower function. The user can immediately halt motion by turning off the Enable Follower %Q bit. Thus, the ABORT %Q bit halts programmed motion and the Enable follower %Q bit halts follower motion.

## *CAM in Absolute Mode can Lose Synch if Master Drive is Disabled*

If the Master axis is disabled and then re-enabled, the CAM axis will lose master counts that result from master axis motion that occurs while the master axis is disabled. In Absolute mode, this can cause the CAM axis to lose synch from the absolute master value. It is recommended that when the CAM command is operated in absolute mode, the CAM be aborted when the Master axis is disabled.

# Specifications

| | |
|---|---|
| ***Power Requirements*** | |
| Power Supply Voltage:<br>Power Supply Current Draw by DSM: | 5 VDC from Host Controller backplane<br>860 mA plus encoder supply current (see next item). |
| Available +5V Current per Module to supply external encoder, if used: | 500 mA (if used, must be added to module +5V current draw) |
| ***PACSystems RX3i*** | |
| Main Rack<br>Model 310 CPUs: | 5 DSM324i modules in CPU baseplate per PWR 040 |
| Series 90-30 Expansion/Remote Racks<br>(5 and 10-slot expansion or remote baseplates - 8 total baseplates per system) | 2 DSM324i modules in remote baseplate with PWR321<br>3 DSM324i modules in expansion baseplate with PWR330/331<br>6 DSM324i modules in expansion/remote baseplate with PWR330/331 |
| PACSystems RX3i Maximum | 32 total DSM324i modules per PACSystems RX3i system |
| ***Series 90-30*** | |
| Main Rack<br>Model 364, 374 CPUs: | 1 DSM324i module in CPU baseplate with PWR321/322/328<br>4 DSM324i modules in CPU baseplate with PWR330/331 |
| Main Rack<br>Model 350, 352, 360, 363 CPUs: | 2 DSM324i modules in CPU baseplate with PWR321/322/328<br>5 DSM324i modules in CPU baseplate with PWR330/331 |
| Expansion/Remote Racks<br>(5 and 10-slot expansion or remote baseplates - 8 total baseplates per system) | 2 DSM324i modules in remote baseplate with PWR321/322/328<br>3 DSM324i modules in expansion baseplate with PWR330/331<br>6 DSM324i modules in expansion/remote baseplate with PWR330/331 |
| Series 90-30 maximum | 20 total DSM324i modules per Series 90-30 PLC system |

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## Installation in Hazardous Locations

***The following information is for products bearing the UL marking for Hazardous Locations:***

- WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2;
- WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES; AND
- WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.
- EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C & D, DIV. 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D OR NON-HAZARDOUS LOCATIONS ONLY.
- *Control circuit modules* require one No. 14 AWG through 22 AWG or two No. 16 AWG through 22 AWG stranded or solid copper conductors. The tightening torque range for the control terminals is 9.6—11.5 in.-lb. Use only wire rated for 90°C. Observe any additional ratings that are provided with the module.

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