DMC-52xx0
Datasheet
**Product Description**

The DMC-52xx0 EtherCAT Controller is Galil Motion Control’s first 8+ axis motion controller. It is a pure EtherCAT controller with the ability to control up to 32 drives and 2 IO modules in one, space efficient package.

The DMC-52xx0 is offered in 2, 4, 8, 16, and 32 axis formats. Coordinated moves can be done within banks of up to 8 axes allowing for minimal changes of Galil’s programming language. The DMC-52xx0 operates in Cyclic Synchronous Position mode (CSP). In this mode, the servo control loop is closed on the EtherCAT drive while the Galil controller sends motion profile commands at rates of 1 kHz. Galil supports a variety of EtherCAT drives available to accommodate most applications.

Designed to solve complex motion problems, the DMC-52xx0 can be used for applications involving jogging, point-to-point positioning, position tracking, contouring, linear and circular interpolation, electronic gearing, ECAM and PVT.

The DMC-52xx0 features 8 uncommitted opto-isolated inputs and 8 uncommitted opto-isolated high power outputs. It also includes 8 uncommitted analog inputs and 8 uncommitted analog outputs (analog I/O is 12-bit standard, 16-bit option available). One 100 Mbps Ethernet port and one USB (serial) port is provided for communication with a host PC or external devices.

The DMC-52xx0 makes configuration and programming easy with just a handful of EtherCAT configuration commands and Galil’s intuitive, two-letter programming language.

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**Features**

- Available in 2, 4, 8, 16, and 32 axis configuration
- 10/100BASE-T Ethernet port; (1) EtherCAT Port;
- (1) USB (serial) port up to 115 kbaud
- Sample times as low as 1000 microseconds
- Cyclic Synchronous Position mode (CSP)
- Modes of motion include jogging, point-to-point positioning, position tracking, contouring, linear and circular interpolation, electronic gearing, ECAM and PVT
- Ellipse scaling, slow-down around corners, infinite segment feed and feed rate override
- Multitasking for concurrent execution of up to eight application programs
- Non-volatile memory for application programs (4000 Lines), variables and arrays (24000)
- Inputs including forward limits, reverse limits, and homing inputs are located on drives that support these inputs.
- Uncommitted, I/O:
  - 8 optically isolated inputs
  - 8 optically isolated high power outputs
  - 8 uncommitted analog inputs*
  - 8 uncommitted analog outputs*
  - High speed position latch (on drives that support this capability)
  - More I/O available with the RIO-47xxx or RIO-574x0
- Accepts single 90-250 Vac input (50-60 Hz)
- Software libraries for Windows and Linux

* Analog I/O is 12-bit standard, 16-bit option available
### Motion Controller
- **Processor**: RISC-based clock multiplying processor with DSP functions
- **Communication**: 10/100 Base-T Ethernet with Auto MDIX
- **Main USB (serial)** port
- **EtherCAT port**
- **Program memory size**: 4000 lines x 80 characters
- **# of Variables**: 510
- **# of Arrays**: 24000 array elements in 30 arrays
- **Position Range**: 32-bit, automatic rollover
- **Maximum Velocity**: TBD
- **Maximum Acceleration**: TBD

### Feature Specific I/O Local Axes
- **Abort**: 5-24VDC opto-isolated
- **Reset**: 5-24VDC opto-isolated
- **Error out**: Opto-isolated

### Power and Mechanical
- **Power requirements**: 90-250 VAC, 5 W, 50-60 Hz
- **Operational temperature**: 0 – 70 deg C
- **Humidity**: 20 – 90 % RH, non-condensing
- **Dimensions**: 9.75” x 5.00” x 1.60”

### Modes of Motion
- **Position Relative & Position Absolute**: Absolute and relative positioning following a trapezoidal velocity profile. Phase correction and profile smoothing available.
- **Jogging**: Velocity control where no final endpoint is prescribed.
- **Vector Mode**: 2D motion path consisting of linear and arc segments. Motion along the path is continuous at the prescribed vector speed even at transitions between linear and circular segments.
- **Linear Interpolation**: 1-8 axes of coordinated linear profiling.
- **Gearing & Gantry Mode**: Electronic gearing and gantry mode with ramped gearing.
- **Electronic Camming (ECAM)**: Following an arbitrary trajectory based upon a master encoder position.
- **Contour**: Allows any arbitrary profile and any set of axes to be prescribed.
- **PVT**: Motion path described in incremental position, velocity, and change of time.

### General Purpose I/O

<table>
<thead>
<tr>
<th>Number of I/O</th>
<th>Voltage Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opto-isolated inputs</td>
<td>8 5-24 VDC</td>
</tr>
<tr>
<td>Opto-isolated outputs</td>
<td>8 12-24 VDC</td>
</tr>
<tr>
<td>Analog Inputs</td>
<td>8 ±10, ±5, 0-5, 0-10 VDC</td>
</tr>
<tr>
<td>Analog Out</td>
<td>8 ±10, ±5, 0-5, 0-10 VDC</td>
</tr>
</tbody>
</table>

### Ordering Options
The DMC-52xx0 has the part number format “DMC-52xx0(Y),” where x designates the number of axes and Y designates different configuration options. The DMC is available in a 2, 4, 8, and 16 axis format. See the table below for configuration options.

Use the Part Number Generator for building your DMC-52xx0
http://www.galil.com/order/part-number-generator/dmc-52xx0

### DMC-52xx0 Options

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>16bit</td>
<td>16-bit analog inputs</td>
</tr>
<tr>
<td>Image</td>
<td>Part Number</td>
</tr>
<tr>
<td>-------</td>
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</tr>
<tr>
<td>GALIL DESIGN KIT (GDK)</td>
<td>Galil’s seamless software for interacting with Galil controllers and PLCs</td>
</tr>
<tr>
<td>GALILSUITE SOFTWARE</td>
<td>Servo Tuning and Analysis with Program Editor and Terminal (GalilSuite has limited support for the DMC-52xx0)</td>
</tr>
<tr>
<td>GALILTOOLS SOFTWARE</td>
<td>GalilTools programming software for Galil controllers (GalilTools has limited support for the DMC-52xx0)</td>
</tr>
<tr>
<td>EPICS SOFTWARE</td>
<td>Communication Drivers and Device Support to create a Galil EPICS IOC</td>
</tr>
<tr>
<td>GALILPVT</td>
<td>Galil PVT Software for PVT mode of Motion</td>
</tr>
<tr>
<td>CABLE-26-1M</td>
<td>26-pin HD male D to discrete wires-1 meter</td>
</tr>
<tr>
<td>CABLE-26-1F</td>
<td>26-pin HD female D to discrete wires-1 meter</td>
</tr>
<tr>
<td>CABLE-USB-2M</td>
<td>2 meter USB 2.0 A male to B male cable</td>
</tr>
<tr>
<td>CABLE-USB-3M</td>
<td>3 meter USB 2.0 A male to B male cable</td>
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<tr>
<td>ICS-48026-M</td>
<td>26-pin D HD male to screw terminals</td>
</tr>
<tr>
<td>ICS-48026-F</td>
<td>26-pin D HD female to screw terminals</td>
</tr>
</tbody>
</table>