



GT-400 Series Motion Controller

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GOOGOL
TECHNOLOGY

The GT-400 series motion controller is a general-purpose 4-axis DSP based motion controller. The series has several product versions, including the GT-400-SG-G, GT-400-SP-G, GT-400-SV-G and GT-400-SG-S. They are widely used in applications ranging from simple point-to-point motion control equipment to highly complicated profile motion control equipment. Application examples are measuring machine, PCB drilling machine, SMT machine, engraving machines, NC lathes, machining center, water jet cutter, laser cutting machine, robot and more.



Main Features

- High-performance DSP and FPGA architecture
- Each card can control up to 4 servo/step motors
- Programmable sampling rate. The minimum interpolation period of four axes is 200µs (GT-400-SG-S is 400µs). The minimum control period of single-axis point-to-point motion is 25µs.
- Modes of motion: point-to-point motion, linear interpolation, circular interpolation, velocity control, manual pulse generator input and electronic gearing
- Programmable trapezoid curve, and S-curve of velocity profile and update parameters on-the-fly
- 32-bit registers for computational parameters and trajectory planning parameters
- User-defined coordinate system
- Set following-error limit, acceleration limit and output limit, to ensure safe and reliable control
- PID (Proportional-Integral-Derivative) digital filter with velocity and acceleration feed-forward, and with integral limit and bias compensation and low-pass filter (for SV and PV cards)
- Coordinated motion up to 4 axes, 2-4 axes linear Interpolation, and 2 axes circular interpolation
- Continuous interpolation function
- On-board memory buffer up to 4K Byte
- Programmable event interrupt: external input interrupt, event interrupt and time interrupt
- Network communication port (Ethernet, Profibus-DP, RS232, RS422/485) (Optional function)

Technical Specification

Axis Channels

- 4 channels of 16-bit analog voltage output signal or pulse output signal with a frequency up to 1MHz
- 6 channels of quadrature incremental encoder input : 4 channels used for feedback signal input of each axis (except PG, SD, SG cards), 2 channels are used for the auxiliary encoder input
- Encoder sampling rate up to 8MHz
- Flexible combination of analog voltage output and pulse output mode (for SV, PV cards)

Analog Input (Optional)

- 8 channels of independent 12-bit $\pm 10V$ analog input

Uncommitted Digital Input/Output

- 16 channels of uncommitted opto-isolated digital input
- 16 channels of uncommitted opto-isolated digital output

Dedicated Digital Input/Output

- Dedicated opto-isolated input per axis: 2 channels for limit switch signal, 1 channel for home signal, and 1 channel for drive alarm signal input
- Dedicated opto-isolated output per axis: 1 channels for drive enable signal and 1 channel for drive alarm signal reset

Position Capture

- 1 channel of probe input can capture the positions of 4 axes simultaneously, 1 channel of home hardware capture signal for each axis and 1 channel index hardware capture signal.

Bus Type

- Standard ISA/PCI104 bus
- GE motion controller + PC
- GE motion controller + embedded system
- Stand-alone through standard network interface (Optional)

System Software

- Demo software in Windows environment
- Windows 98/2000/NT equipment drivers and DLL
- C/C++ function library and example source code in DOS

Power Consumption

- +5V, Icc = 2A, power supplied from PC
- $\pm 12V$, Icc = 60mA, PC power supplied from PC
- +24V or +12V, Icc = 2A, external power provided by user

Environment

- Operating temperature: 0-60°C
- Relative humidity: 5% - 90%, non-condensing

Mechanical Dimension

- 122mm x 185mm

Ordering Guide

Model	No of Axes	Motor Type	Control Mode	Feedback	PC Bus Type
GT-400-SG-G	4	Step/Servo	Pulse output, open loop control	2 channels auxiliary encoder input	ISA/PCI/PC104
GT-400-SP-G	4	Step/Servo	Pulse output, open loop control, encoder input	4 encoder input, 2 channels auxiliary encoder input	ISA/PCI/PC104
GT-400-SV-G	4	Step/Servo	Analog output & Pulse output, close loop control, encoder input	4 encoder input, 2 channels auxiliary encoder input	ISA/PCI/PC104
GT-400-SG-S	4	Step/Servo	Pulse output, open loop control, high interpolation accuracy	4 encoder input, 2 channels auxiliary encoder input	ISA/PCI/PC104

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