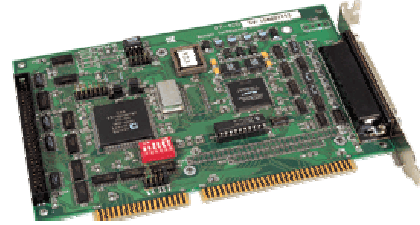


## GT-400 Series Motion Controller

GT-400 series motion controllers developed by Googol Technology Ltd is a general-purpose type of 4-axis DSP based motion controllers. The series have several product models as listed below, widely used in applications ranging from simple point-to-point motion control equipment to highly complicated profile motion control equipment, such as measuring machine, PCB drilling machine, SMT, engraving machine, NC lathe, machining center, water jet cutter, laser cutting machine, robot and more.



### Ordering Information

Type	Model	Number of Axes	Motor Type	Control Mode	Feedback Input	PC Bus Type
4 axis, for point-to-point motion control	GT-400-PG-G	4	Step/Servo	Pulse output, open loop control	2 channels auxiliary encoder input	ISA/PCI/PC104
	GT-400-PV-G	4	Step/Servo	Analog output & Pulse output, close loop control, encoder input	4 encoder input, 2 channels auxiliary encoder input	ISA/PCI/PC104
4 axis, for point-to-point & Interpolation motion control	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 interpolating accuracy	4 encoder input, 2 channels auxiliary encoder input	ISA/PCI/PC104

### Main Features:

- Adopt high-performance DSP and FPGA technology
- Each card can control 4 servo/step motors
- Programmable sampling period. The minimum interpolation period of four axes is 200us (GT-400-SG-S is

400 us). The minimum control period of single-axis point-to-point motion is 25us

- 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
- All registers for computational parameters and trajectory planning parameters are 32 bits
- 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 feedforward, and with integral limit and bias compensation and low-pass filter (for SV & PV cards).
- Coordinated motion up to 4 axes, 2-4 axes linear interpolation, and 2 axes circular interpolation
- Continuous interpolation function
- On-board circle program buffer up to 4KHz.
- 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 channel for drive enable signal and 1 channel for drive alarm signal reset.

### **Position Capture**

- 1 channel of probe input can capture the positions of four 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 & DLL.
- C/C++ function library and Example source code in DOS.

### **Power Consumption**

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

### **Environment**

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

### **Mechanical Dimension**

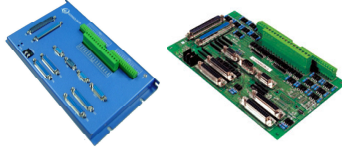
122mm x 185mm

## Standard Accessories

- GT-400-ACC1: interconnect board
- GT-400-ACC2: terminal board
- GT-400-ACC3: 62-pin shielded cable (x2)
- GT-400-ACC4: 60-pin flat cable.



GT-400-ACC1 & ACC4



GT-400-ACC2



GT-400-ACC3