

GE-300-SX-LASER Motion Controller

The GE-300-SX-Laser series motion controllers contain -SG and -SV models which are developed based on Googol's economic model GE-300-SG motion controller. The main feature of this series motion controllers are the consideration of the synchronization and coordination between the motor motion and the



laser system, supplying of specific signal for several sorts of laser system, such as CO₂ laser, or YAG laser (equipped with terminal board named GA1-400-ACC2-OYAG). This series are suitable for many industrial application related with laser processing, such as Laser cutting, Laser engraving, Laser drilling, rapid prototype typing, and Laser joining, etc.

Technical specifications

1) Motion Control Functions

- Synchronized motion of 3 axes, linear and circular interpolation;
- Pulse output of 3 axes, programmable output modes, maximum pulse output frequency 256KHz;
- Support buffer motion and immediate motion;
- Motion start, pause, stop, and restore;
- Auto emergent stop motion when motion touched the limit signal;
- High precision of interpolation, the precision of circular interpolation is under the 0.5 pulse;
- On-board, circular memory buffer for fast communication and look ahead function;
- Continuous and smooth motion for minute multi-segments path;
- Support the management of coordinate system offset;
- Supply the delay between two segment motion, unit: 200us;
- Allow user to change the feed speed of the motion on the fly by changing the override;
- Support the management of general IO during buffer motion.

2) Laser Control Functions:

- Provide several sorts of signal to control two sorts of laser:
 1. signals for CO₂ laser:
LASER ON signal, TTL standard;

- PWM signal, or frequency signal, or Analog voltage signal (only in GE-300-SV-LASER motion controller), selected by user command
2. signals for YAG laser (must use terminal board named GA1-400-ACC2-OYAG)
 - LASER ON signal, TTL standard;
 - Q pulse signal, the duty and frequency can be programmable;
 - FPK signal (First Pulse Killer)
- Provide laser on and off signal delay function, unit: 1 μ s.
 - Motion delay also can be used between two laser on/off signal;
 - Three energy control of laser output methods provided
 - i. Energy follow up mode: output of laser energy control varies according to the motion speed changes
 - ii. Interval direct output mode: magnitude of laser energy output is changed in different trajectory segment intervals, users can directly control the energy of the laser between path segments
 - iii. Scan mode: with this mode, laser energy and laser on/off can be set for each point in a line. Controlling motors to work line by line can scan an image such as bmp. The function is accomplished by hardware with high speed.

Note: energy output mode should be set to duty output mode when location comparison output control mode is used

- Provide different laser power control output mode: duty ratio, frequency or voltage (only in GE-300-SV-LASER)
 - i. The range of output frequency: 200HZ~55KHZ, the default value is 200HZ;
 - ii. The range of duty ratio: 0%~100%, minimum variance: 1%, system default: 50%;
 - iii. If the laser power control output mode is frequency, the minimum variance is 200HZ
- When operating in buffer continuous trajectory motion, laser energy offset can be altered on line at anytime via commands

3) Input and Output Signal:

- 2 channel of limit input signals, 1 channel of home input signal and 1 channel of driver alarm input signal for each axis, all of them are opto-isolated;
- 1 channel of axis on output signal, 1 channel of driver reset output signal for each axis, all of them are opto-isolated;
- three channel of axis encoder input signals, with index captured function;
- 16 bit general purposed IO, These can be operated in buffer or instantaneous modes

4) Interface:

- Support standard PCI, ISA and PC104;

- Application mode:
 - ◆ GE-300-SX-LASER-PCI/ISA + PC
 - ◆ GU-300-SX-LASER-XXX/XXX (embedded motion controller)

5) System Software:

- Driver program and DLL for Windows 98/2000/NT, library of C language for DOS;
- DEMO in Windows 98/2000/NT;
- The motion controller with PCI bus must be installed according to the guidance specified in user manual before being used, the motion controller with ISA bus must be installed when working under the Windows system.

Selection Guide

Model	Motor control	Laser power control
GE-300-SG-Laser-G	Pulse output	Duty ratio or frequency
GE-300-SV-Laser-G	Pulse output	Duty ratio, or frequency, or analog voltage output

Ordering Information

	Model No.	Description	Qty
Standard Package	GE-300-SG-LASER-PCI/ISA; or GE-300-SV-LASER-PCI/ISA	Motion control card with 3 axes motion control and 1 channel laser energy control	1
	ACC1 and ACC4	Connector with a 60-pin flat cable	1
	ACC3-A1-062015	1.5m 62-pin cable (×2)	2
	GA1-300-ACC2-G	Terminal board	1
	Control Software	Control software for Windows 98/2000/NT, extended DLL; function library, etc.	1
Option	GA1-400- ACC2-OYAG	Terminal board special for YAG laser resource	
	ACC3-A1-062030	3.0 m 62-pin cable	