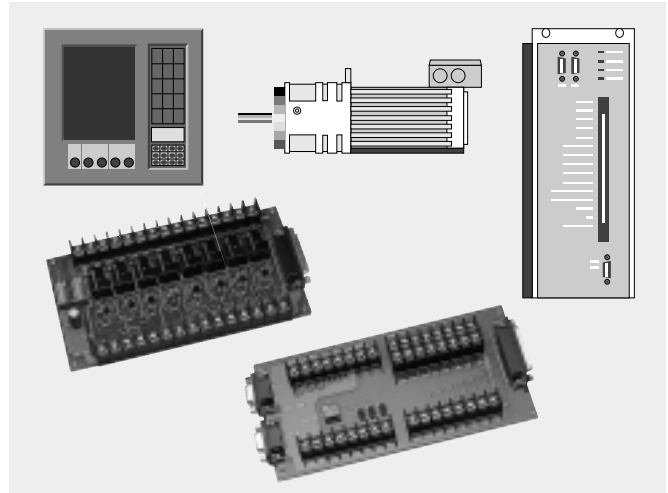# SERVO-300
3-AXIS, High-speed Servo Motor Control Board

Functional Description

SERVO-300 is a 3-axis, command-type, servo control baord with quadrature encoder feedback. The embedded CPU of SERVO-300 performs the motion commands transferred from PC via a 2K bytes FIFO. The CPU also send the information of position and status to the PC via another 2K bytes FIFO. Since three are two FIFO on the board, SERVO-300 is suitable for widows operating system. The SERVO-300 provides DOS, Windows 98/95, NT, and LabView drivers. The SERVO-300 provides comprehensive motion capability with performance and reliability that is really low in cost and easy to use.

Features

- Control 3 servo axes
- V command output
- FIFO bus interface
- Command type, totally 42 commands
- Provides simulation/open loop/ closed loop modes
- Embedded CPU on board
- Linear interpolation/circular interpolation
- 2500 points per axis, pitch error compensation
- Can detect the hardware failure
- Direction of each axis can be configurable

- Software/Hardware emergency stop
- 2500 Vrms optical isolation
- Auto protection for each limit switch
- Provides DOS, Windows 98/95, NT,LabView drivers

Applications

- X-Y table control
- Robotics
- Mechanical positioning control

Specifications

- No. of axes: 3 axes
- Position accuracy:
  +/-1 quadrature count
- Output Type:
  12-bit analog output with +/-10V
- Control algorithm: PD control
- Sampling rate:
  2.2ms for 3-axis control system
- Two FIFO buffer
- FIFO size: 2K byte/each
- 8 isolated digital inputs & 7 isolated digital outputs
- Forward, Backware, Home, limit switch per axis
- Connector 1:
  D-sub 9-pin connector for analog output and servo-on signal
- Connector 2:
  D-sub 9-pin connector for encoder input and limit switch

- Connector 3:
  D-sub 25 connector for limit switchand relay output
- Connector 4:
  D-sub 25 connector for encoder input
- Power Requirements:
  +5V: 950mA typ.
- Operating temp range: 0° to 60°C
- Storage temp range: -20°C to 70°C
- Humility: 95% non-condensing
- Weight: 181g
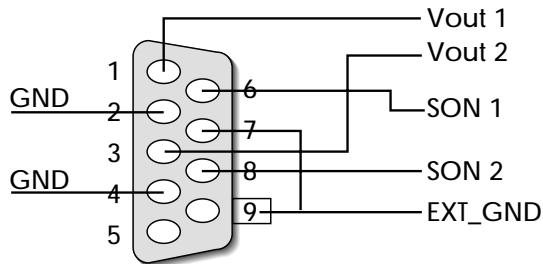- Dimensions: 208mm x 121mm

Software DDA Technolgoy

For precise control and adjustable speed, the Software DDA will divide the command into several equal delta commands. It is very important to select a proper DDA value for the system.
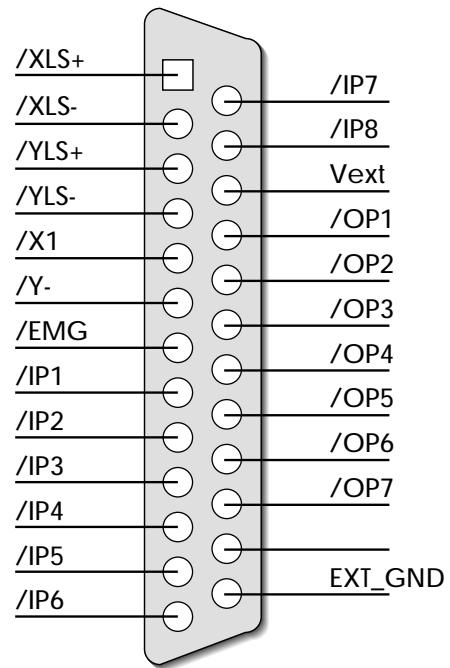
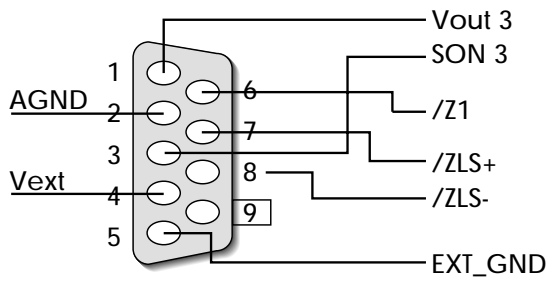# SERVO-300
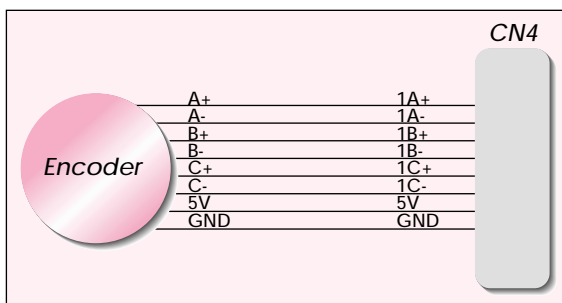## 3-AXIS, High-speed Servo Motor Control Board

Pin assignment of CN1 Connector

Vout 1
Vout 2
SON 1
SON 2
EXT_GND

GND
GND

1
2
3
4
5
6
7
8
9

Pin assignment of CN3 Connector

/XLS+
/XLS-
/YLS+
/YLS-
/X1
/Y-
/EMG
/IP1
/IP2
/IP3
/IP4
/IP5
/IP6

/IP7
/IP8
Vext
/OP1
/OP2
/OP3
/OP4
/OP5
/OP6
/OP7

EXT_GND

Pin assignment of CN2 Connector

Vout 3
SON 3
/Z1
/ZLS+
/ZLS-

AGND
Vext

1
2
3
4
5
6
7
8
9

EXT_GND

Connection between Encoder and Servo-300

CN4

Encoder

A+   1A+
A-   1A-
B+   1B+
B-   1B-
C+   1C+
C-   1C-
5V   5V
GND   GND

Pin assignment of CN4 Connector

1A+
1A-
1B+
1B-
+5V
GND
1C+
1C-
+5V
3A+
3B+
3C+

2C-
2C+
GND
+5V
2B-
2B+
2A-
2A+
GND
3A-
3B-
3C-
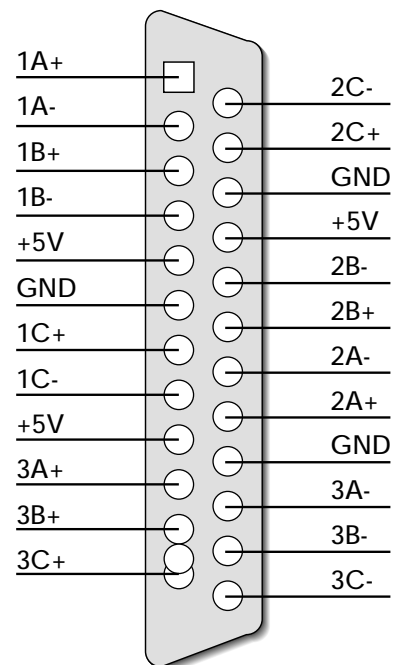
Connection between Open-collector type Encoder and Servo-00

CN4

Encoder

A+   1A+
B+   1A-
C+   1B+
      1B-
      1C+
      1C-
5V   5V
GND   GND

open collector
type encoder
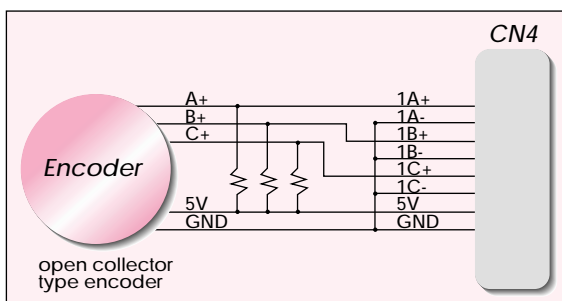
Motion Board
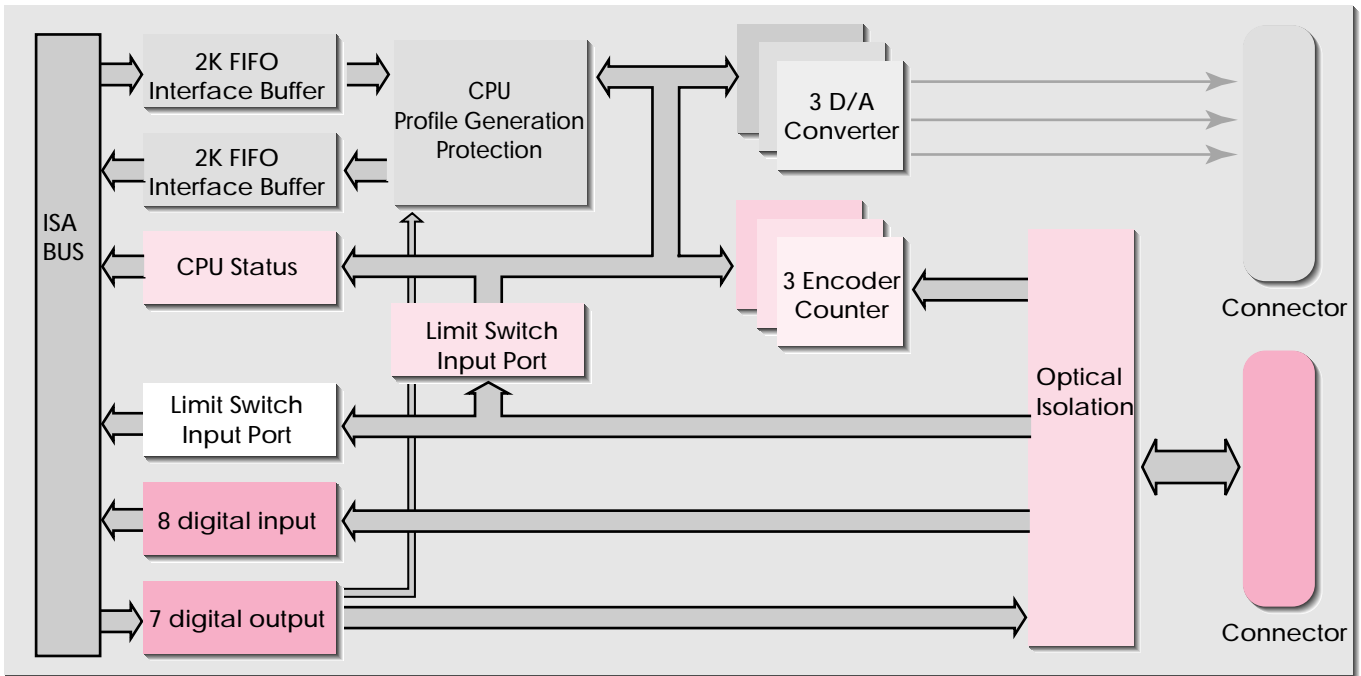
Figure A: Block Diagram
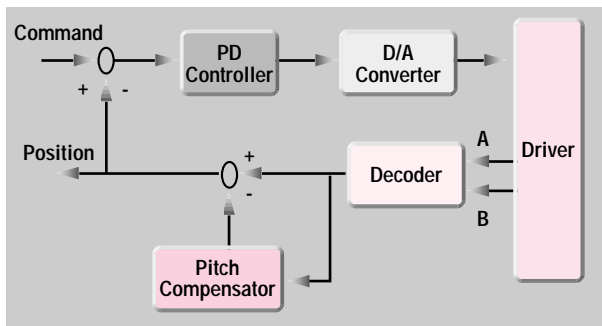
Figure B: Servo-Loop Diagram

Motion Board

Figure C: Test Panel

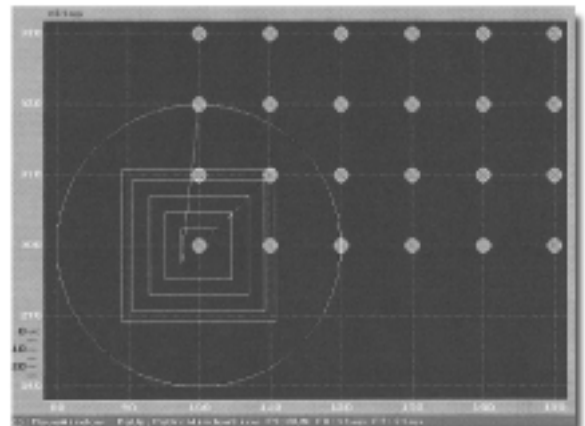**Figure D: Customer made Machine-Control Software**
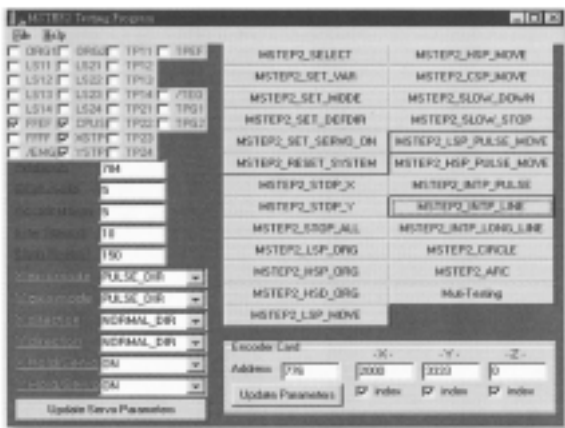
Order Description

- SERVO-300
  3-axis SERVO motor controller board
- DB-200
  Encoder interface board for SERVO-300
- DB-8R:
  Relay board for SERVO-300