

ELO 2500S serial Controller for SAW

P/N 351077-000

Electrical

Supply Voltage and Current

- +5 Vdc, nominal (+4.75 to +5.25 Vdc)
- 60 mA, typical at +5 Vdc. Average power dissipation is 0.3 W, typical.
- Supply must be capable of sourcing 100 mA, minimum.
- Total noise and ripple requirement must be less than 100 mV (p-p) for frequencies below 1 MHz, and less than 50 mV (p-p) for frequencies above 1 MHz.

Interface

- EIA 232E (Serial RS-232), DCE configuration. 8 Data Bits, 1 Stop Bit, No Parity, Full Duplex.
- Hardware handshaking: RTS/CTS.
- DSR is pulled HIGH (>+3V) by the 2500S when connected and powered. DTR is ignored.

Baud Rate

- 9600 (default) and 19200

Operating Modes

- Full IntelliTouch SmartSet or E281A-4002 protocols, jumper selectable
- Initial/ Stream/ Untouch/ Z-axis Enable Modes

Touch Resolution

- 4096x4096, size independent, 255 levels of Z (pressure)

Conversion Time

- Approximately 10.4 ms per coordinate set

Reliability

- MTBF greater than 300,000 hours per MIL-HDBK-217-F2 using the parts stress calculation method for ground benign environment with an ambient temperature of 25 °C

Environmental

Temperature

- Operating: 0 °C to 65 °C
- Storage: -25 °C to 85 °C

Humidity

- Operating: 10% to 90% RH, non-condensing
- Storage: 10% to 90% RH, non-condensing

Operating Altitude

- 10,000 feet

Shock and Vibration

- Three axis sine wave, 50 Hz to 2kHz, 1 G, 2 minutes/Octave with dwell on resonances

ESD

- Per EN 6100-4-2 1995: Level 4. Contact discharge 8kV, air discharge 15kV.

Flammability

- The printed circuit board substrate is rated 94V0. All plastic components, such as headers and connectors, are also rated 94V0.

Physical Characteristics

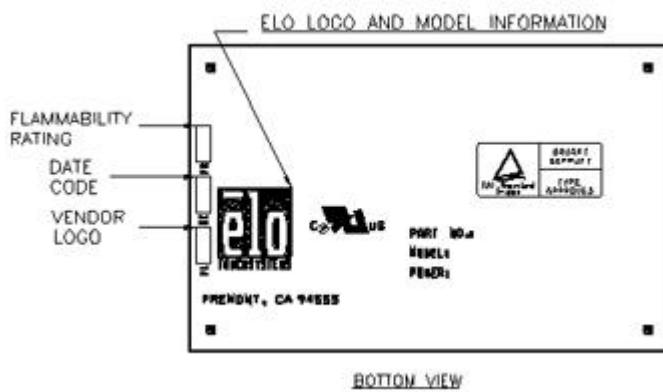
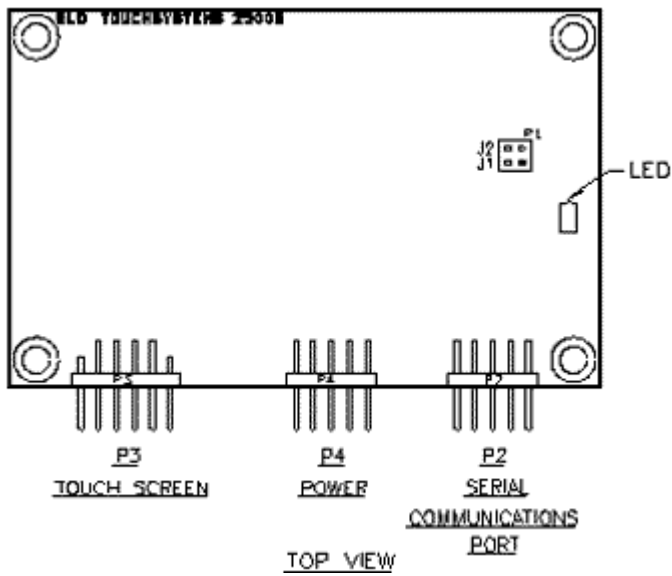
Construction

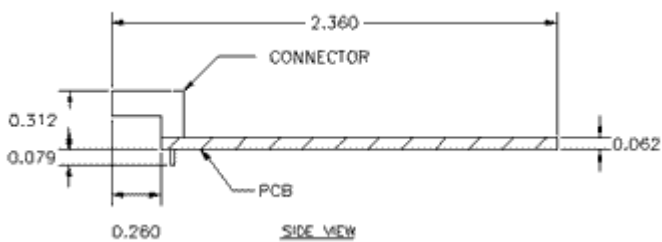
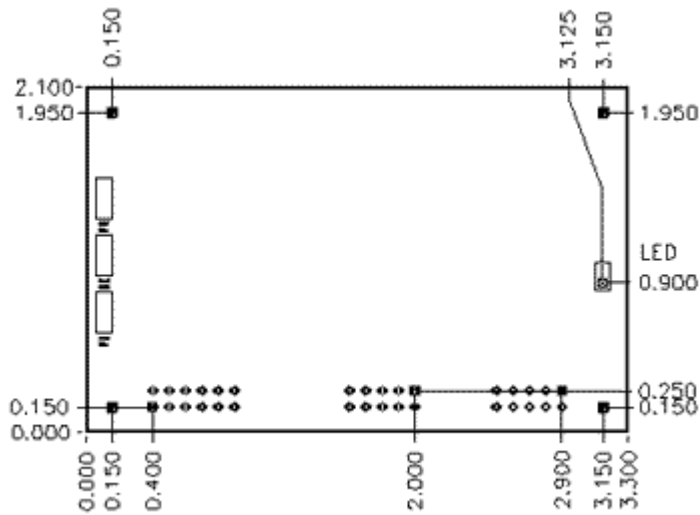
- Four-layer surface-mount design with internal ground plane for EMI suppression

Dimensions

- Total Width: 2.36 inches (59.94 mm), including connectors
- Total Length: 3.30 inches (83.82 mm)
- Total height: 0.40 inches (10.16 mm)
- All mounting holes are plated through for chassis ground connection. Refer to the drawings at the end of this document.

Drawings





Note: Side view values represent typical dimensions

Connectors and Pin Definitions

- The connector configuration permits the controller to be placed in-line between the touchscreen and serial I/O attachments.

Serial connector, P2, and signal descriptions

The serial I/O connector, P2, is a dual row by five position header with 0.025 inch pins on 0.100 centers. The header is compatible with insulation displacement cable (IDC) connectors such as Berg series 71600, series 71602, series 66900, and series 66902, Molex style 40312, Amp series 746285 and series 746288 receptacles. The header is also compatible with crimp termination, discrete wire receptacles and housings including Berg Mini-Latch housings and Mini-PV receptacles, Molex series 70450 connectors, and the Amp AMPMODU Mod. IV connector family. Pin numbering schemes for discrete wire connectors differ between manufacturers. Refer only to the

following figure for pin number locations. When the mating IDC receptacle is cabled to an IDC DB-9 connector, the interface assumes a DCE configuration as described in ANSI/EIA/TIA 232-E.

Figure 1. Pin diagram for serial connector, P2, as viewed from connector mating surfaces

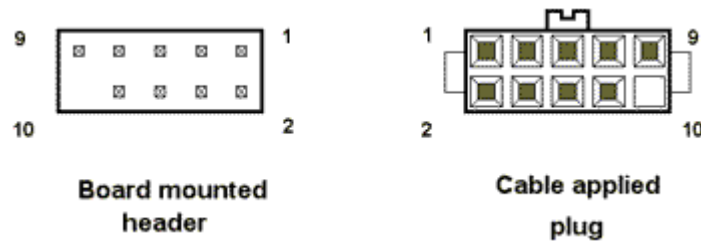


Table 1. Serial Connector, P2, signal names and functions

Signal Name	DB-9 pin	P2 pin	Sourced by	Signal Function
-DCD	1	1	ctrl	"carrier detect", handshake='0' when controller power on
-DSR	6	2	ctrl	"data set ready", handshake='0' when controller power on
RXD	2	3	ctrl	serial data from controller to host
-RTS	7	4	host	"ready to send", handshake='0' when controller may send
TXD	3	5	host	host serial data from host to controller
-CTS	8	6	ctrl	ctrl used as "ready to receive", handshake='0' when host may send
-DTR	4	7	host	host ignored
RI	9	8	n/u	not used
SG	5	9	com	signal ground
n/u	n/c	10	n/u	connector key

Signal electrical characteristics are given in the following table. These specifications comply with ANSI/EIA/TIA 232-E.

Table 2. Serial signal electrical characteristics

Parameter	Value	Applicable Signals (1)	EIA-232 Subsec.
Minimum ON state input voltage (2)	+3 volts	TxD, RTS, DTR	2.1.3
Minimum OFF state input voltage (2)	-3 volts	TxD, RTS, DTR	2.1.3
DC Load Resistance, receiver	5 kO 2 kO	TxD, DTR	2.1.4
DC Load Resistance, RTS	1.75 kO 500 O	RTS	2.1.4
Source Impedance (Power Off)	> 300 O	DSR, DCD, CTS, RxD	2.1.5
Power-off condition interpretation	ON condition	RTS, DTR	2.1.5
Output Voltage, Open Circuit	25 volts, max. (3)	RxD, DSR, DCD, CTS	2.1.6
Output Voltage into test load (4)	>5 volts;<15 volts (3)	RxD, DSR, DCD, CTS	2.1.6
Short Circuit Current	<100 mA	RxD, DSR, DCD, CTS	2.1.6
Transition Characteristics	per EIA-232-E	RxD, DSR, DCD, CTS	2.1.7

NOTES:

(1) Signals defined in Table 1. Serial Connector, P2, signal names and functions

(2) Measured with respect to circuit SG, Signal Ground

(3) Absolute magnitude

(4) Output voltage measured over the entire range of test load from 3000 ohms to 7000 ohms

Touchscreen connector, P3, and signal descriptions

The touchscreen connector, P3, is a dual row by six position header with 0.025 inch square pins spaced on 0.100 centers. P3 mates with the Berg Mini-Latch receptacle on the IntelliTouch touchscreen cable. The pins are numbered as shown in the figure. The withdrawal force exceeds 3.9 lbs.

Figure 2. Pin diagram for touchscreen connector, P3, as viewed from connector mating surfaces

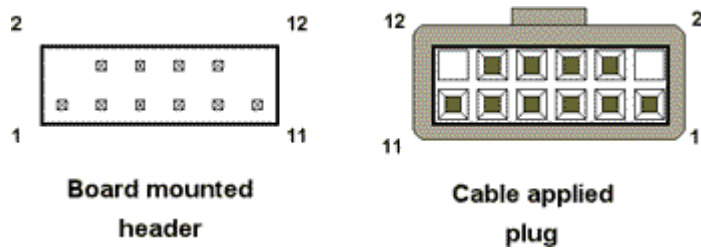


Table 3. Touchscreen connector, P3, pins and signal names

Signal name	P3 pin	Signal function
Chassis	1	frame ground for cable shield
none	2	connector key
Y rcv +	3	
Y xmt +	4	
Y rcv -	5	
Y xmt -	6	analog ground
analog gnd	7	analog ground
X xmt -	8	analog ground
X rcv -	9	
X xmt +	10	
X rcv +	11	
none	12	connector key

Power connector, P4

The power connector, P4, is a dual row by five-position header with 0.025-inch pins on 0.100 centers. The header is compatible with insulation

displacement cable (IDC) connectors such as Berg series 71600, series 71602, series 66900, and series 66902, Molex style 40312, Amp series 746285 and series 746288 receptacles. The header is also compatible with crimp termination, discrete wire receptacles and housings including Berg Mini-Latch housings and Mini-PV receptacles, Molex series 70450 connectors, and the Amp AMPMODU Mod. IV connector family. Pin numbering schemes for discrete wire connectors differ between manufacturers.

Refer only to the following figure for pin number locations. Signal connections are shown in the table following.

Figure 3. Pin diagram for power connector, P4, as viewed from connector mating surfaces

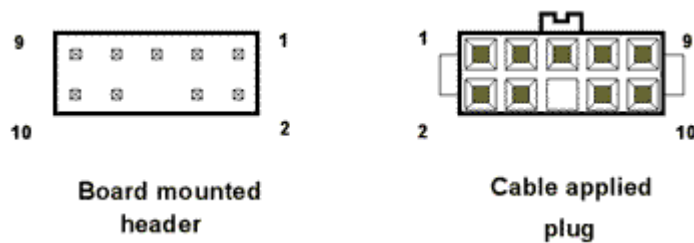


Table 4. Power connector, P4, pins and signal names

Signal name	P4 pin	Signal function
+Regulated Pwr	1	+5 volts DC +/- 5%
Pwr Com	2	Supply voltage common
reserved	3	no connection allowed
Pwr Com	4	Supply voltage common
LED Remote (1)	5	
n/c	6	key location
n/c	7	
Frame ground	8	
-Reset	9	Open = normal operation short to Pwr com = hardware reset.

reserved	10	no connection allowed
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NOTES:

(1) Source impedance is 500 ohms to Vcc. Current drive available for typical LED is 6mA.

Jumper Settings

Table 5. Jumper Locations and function if installed.

Jumper	Function
J1	Set NVRAM to defaults on power up
J2	Emulation Mode = E281A-4002

The 2500S is shipped with a single jumper fitted to not enable either J1 or J2. Consult the drawings later in this document for the position of the jumpers.

LED Diagnostic Characteristics

A green LED indicates controller status as follows:

LED Blink Rate	Function
Once per second	Normal condition, untouched state
On continuously	Touched state
Twice per second	Error detected

Agency Approvals

- Elo controllers are "CNR/USR" UL Recognized Components for USA and Canada, Category NWGQ2, Information Technology Equipment Including Business Equipment.
- Elo controllers are TUV Bauart certified as components.
- Elo controllers have been tested for compliance with FCC Part 15 Class B limits*.
- Depending on the application, it may be necessary to pay special attention to system grounding and shielding, and it may be necessary to apply ferrite suppressor beads.

