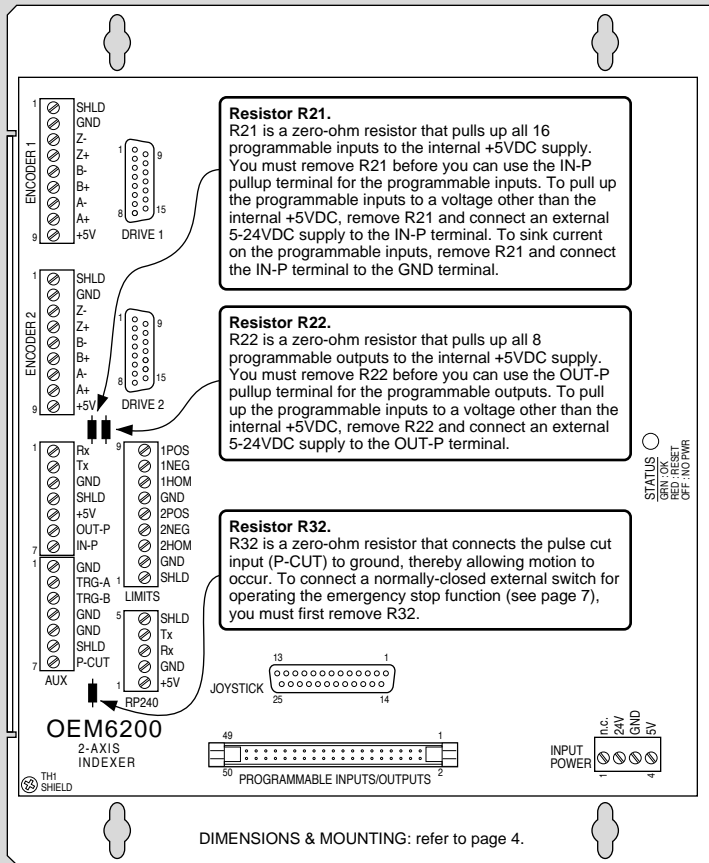


## Connections

See also pages 5-21



### OTHER PIN OUTS

#### PROGRAMMABLE I/O

Pin	Function
1	Input #16 (MSB of inputs)
3	Input #15
5	Input #14
7	Input #13
9	Input #12
11	Input #11
13	Input #10
15	Input #9
17	Output #8 (MSB of outputs)
19	Output #7
21	Output #6
23	Output #5
25	Input #8
27	Input #7
29	Input #6
31	Input #5
33	Output #4
35	Output #3
37	Output #2
39	Output #1 (LSB of outputs)
41	Input #4
43	Input #3
45	Input #2
47	Input #1 (LSB of inputs)
49	+5VDC

Even pins connected to common logic gnd.  
MSB = most significant bit.  
LSB = least significant bit.

#### DRIVE

Pin	Function
1	Step +
2	Direction +
4	In-Position
5	Drive Fault
7	+5VDC Output
8	Shield (chassis gnd)
9	Step Return (-)
10	Direction Return (-)
11	Shutdown +
12	Shutdown Return (-)
13	Digital Ground
14	Digital Ground

Pins 3, 6, & 15 are reserved

#### JOYSTICK

Pin	Function
1-3	Analog Channels 1-3
8	Shield (chassis gnd)
14	Digital Ground
15	Axes Select Input
16	Velocity Select Input
17	Release Input
18	Trigger Input
19	Auxiliary Input
23	+5VDC Output

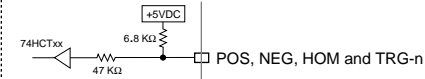
Pins 4-7, 9-13, 20-21, 24-25 are reserved

### I/O SPECIFICATIONS & INTERNAL SCHEMATICS

**DC Input**.....5VDC  $\pm$ 5%, 2A min.; or 24VDC  $\pm$ 10%, 1A min.  
(current requirements depend on the type and amount of I/O used – see page 18).

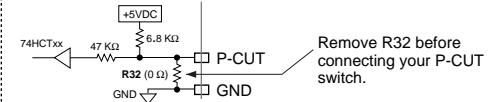
**Serial Com**.....RS-232C 3-wire (Rx, Tx & GND on the AUX connector);  
Up to 99 units in a daisy chain.  
9600 baud (or use AutoBaud feature – see page 6);  
8 data bits; 1 stop bit; no parity.

#### Limits and Trigger Inputs (pg. 10 & 13)



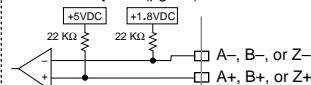
**Specs:** TTL-compatible\*; voltage range = 0-24VDC.

#### Pulse-Cut (P-CUT) Input (pg. 7)



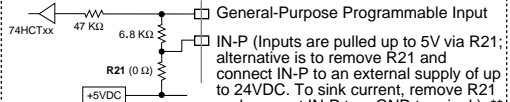
**Specs:** TTL-compatible\*; voltage range = 0-24VDC.

#### Encoder Inputs (pg. 11)



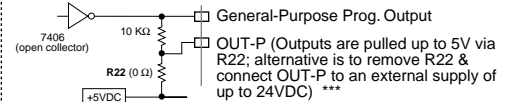
**Specs:** Differential comparator. Use 2-phase quadrature encoders; max. frequency = 1.6 MHz; min. time between transitions = 625 ns. TTL levels (Low  $\leq$  0.4V, High  $\geq$  2.4V); range = 0-5VDC.

#### Programmable Inputs (pg. 14)



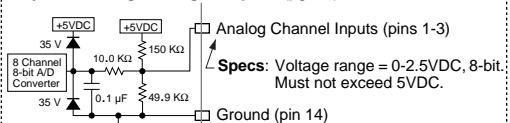
**Specs:** TTL-compatible\*; voltage range = 0-24VDC.

#### Programmable Outputs (pg. 14)



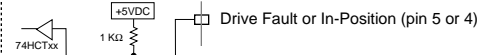
**Specs:** Open collector output. Max. voltage in OFF state (not sinking current) = 24V; Max. current in ON state (sinking) = 30mA.

#### Joystick Analog and Digital Inputs (pg. 12)



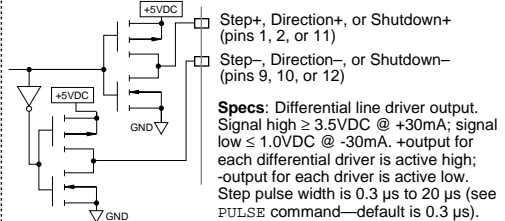
**Specs:** TTL-compatible\*; voltage range = 0-24VDC.

#### Drive Inputs (pg. 8 & 9)

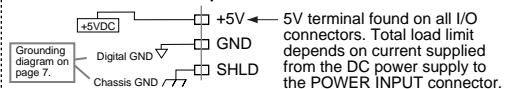


**Specs:** TTL-compatible\*; voltage range = 0-5VDC.

#### Drive Outputs (pg. 8 & 9)



#### Terminals found on multiple connectors



\* TTL-compatible levels: Low  $\leq$  0.4V, High  $\geq$  2.4V.

\*\* You must remove resistor R21 before using the IN-P pullup terminal.

\*\*\* You must remove resistor R22 before using the OUT-P pullup terminal.

## Troubleshooting

See also pages 23-27

- STATUS LED: Green = 5V or 24V DC power is applied. Red = power reset required. Off = no power.
- Status information (see command descriptions in 6000 Series Software Reference):  
General status information.....TASF, TSSF, TSTAT  
Limits (end-of-travel, home).....TASF, TLIM  
P-CUT input.....TINOF (bit #6)  
Programmable inputs and TRG-n.....TIM, INFNC  
Programmable outputs.....TOUT, OUTFNC
- P-CUT input must be grounded to GND terminal to allow motion.
- NEG & POS inputs must be grounded to GND terminal to allow motion (or disable with LHØ command).
- To help prevent electrical noise, shield all connections at one end only (see also Appendix A).
- Error messages while programming or executing programs – see 6000 Series Programmer's Guide.
- Technical support – see phone numbers on inside of front cover, and the HELP command response.