Selection Checklist

Limit Switch, Analog Positioning Controls, and Edge Guide

- [ ] 1. Photocopy and complete the Product Selection Worksheet in the Engineering Section for each axis of linear motion in your application.

- [ ] 2. Determine if your application is better suited to a Limit Switch Control, Analog Position Control, or Edge Guide Control.
  - Limit Switch Controls: Your most cost effective solution for applications requiring simple positioning to predetermined locations. See page F-3 for a comparison of the D2200, D2300, H3301B, and H4301.
  - Analog Position Controls: work with our electric cylinders and rodless actuators to create cost effective, closed loop, absolute linear positioning systems. See page F-4 for a comparison of the D2500, H3501, H4501, and B8501.
  - Edge Guide Controls: provide a cost effective method of adjusting and maintaining web edge position. See page F-5 for a comparison of the H3321 and H4321 Edge Guide Controls.

- [ ] 3. Select a control that you feel is suitable to your application.

- [ ] 4. Calculate performance requirements of your linear motion application. Please see page K-1 for guidance on the appropriate Engineering calculations for your application.

- [ ] 5. Consider mechanical products that are compatible to the limit switch, analog position, or edge guide control that you selected.
  - For information on IDC Electric Cylinders see page A-1
  - For information on IDC Rodless Actuators see page B-1

- [ ] 6. Select an IDC Mechanical Product that meets all of your application requirements, such as usable stroke, force, speed, duty cycle, etc.

- [ ] 7. Double check that the control you selected in step 3 is compatible with the IDC mechanical product selected in step 6.

- [ ] 8. Call your local IDC distributor to discuss your application, or call IDC Applications Engineering at (800) 747-0064 to verify that the product you selected is appropriate for your application.

- [ ] 9. Place an order with your local IDC distributor for the product selected.

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Specifications

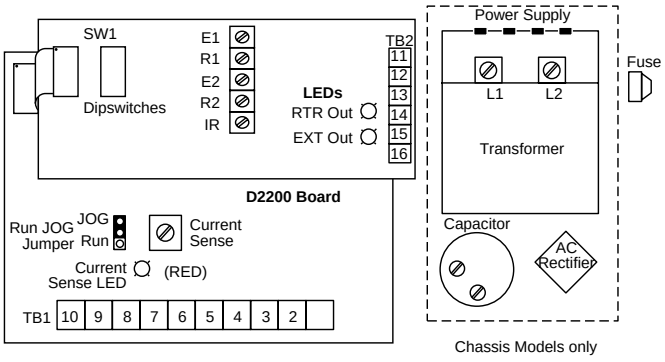
Compatible Actuators:
EC2-D, NV-D, N2-D, R2A-D, R3-D

The D2300 is designed for positioning applications requiring simple linear extend and retract motion which REQUIRE variable speed control.

The D2300 commands linear move profiles based on input activation. Six optically coupled inputs and four open-collector outputs allow for a simple interface to external devices such as PLCs, I/O Cards, simple pushbutton operator stations, and "Normally Open" position sensors.

I/O Programmability via dipswitches adds increased versatility and auto function capabilities.

Physical Layout



Power Requirements

D2300	20 to 30 VDC; 10 Amps maximum
D2301, D2302, D2303	105-125VAC; 50/60 Hz (from factory) @ 2 Amps max
(Jumper Selectable)	208-245VAC; 50/60 Hz @ 1 Amp max (adjustable current trip: 0–10 Amps)
Motor Output	0-28 VDC, @ 10 Amps max (adustable current trip: 0-10 Amps). Note: Motor rated for 4.5 Amps continuous; 10 Amps peak.
Inputs	
Stop, EXT, RET, LS1, LS2, SP2	Sinking Inputs (1K Pullup to 12 VDC) High Level (Off) 10.5 - 12.25 VDC (open circuit high) Low Level (Activated) 0-0.8 VDC (sinking to ground) @ 12mA max
Outputs	
EXT COMP, RTR COMP, COM EXT-EN, COM RTR-EN	Open Collector Sinking Output (1K pullup to 12 VDC) High Level (OFF) 10.5–12 VDC (open circuit high) Low Level (On) 0–0.5 VDC capable of sinking 100mA
Operational	
Variable Speed Range	15:1
PWM Frequency	2000Hz
Environmental	
Operating Temperature	32° to 122°F [0° to 50°C]
Storage Temperature	-40° to 185°F [-40° to 85°C]
Dimensions	See page F-16

Remote Speed Pots

MOD300 – 6 ft ribbon cable with remote connections for on board speed potentiometers; E1, R1, E2, and R2. MOD300 is supplied with two 10K ohm, 0.25W potentiometers for E1 and R1 connections.

Timer Option

D2400 series – 0 to 20 sec. adjustable time delay allows control of dwell time between cycles. DIP switches allow configuration of the time delay to begin when:

- LS1 Limit Switch triggered
- LS2 Limit Switch triggered
- Motor Current Limit (Extend)
- Motor Current Limit (Retract)

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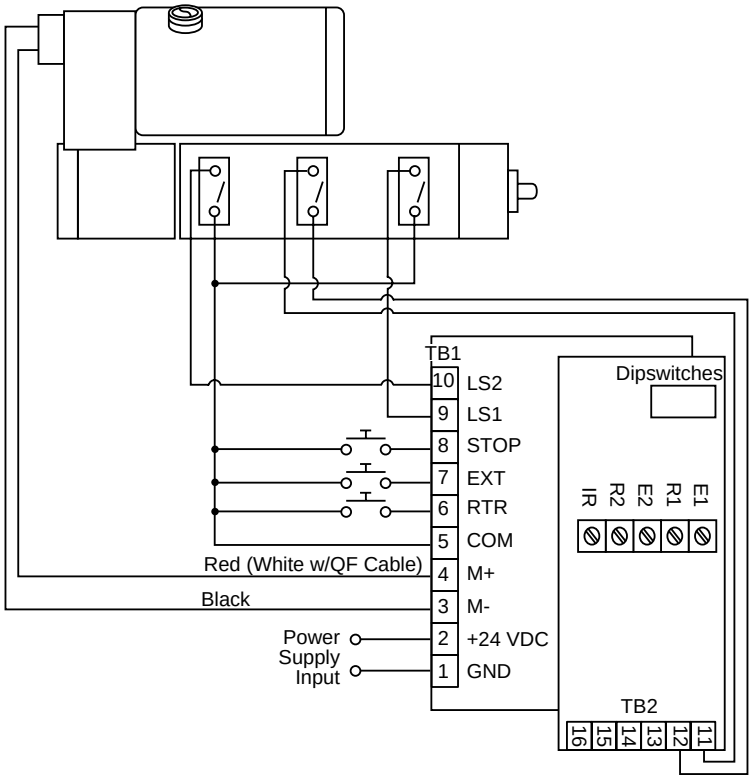
Specifications

Typical Wiring



TB1 10 Pin Terminal Strip

1	GND	External Supply Input: DC Ground
2	+24V	External Supply Input: +24 VDC
3	M-	Motor Negative Terminal
4	M+	Motor Positive Terminal
5	COM	DC Ground
6	RTR	Retract Input
7	EXT	Extend Input
8	Stop	Stop Input
9	LS1	Limit Switch Input #1
10	LS2	Limit Switch Input #2

TB2 6 Terminal Connector

11	SP2	Speed Change
12	COM EXT-EN	Common – extend enable
13	COM RTR-EN	Common – retract enable
14	EXTCOMP	Extend Complete Output
15	RTRCOMP	Retract Complete Output

Dipswitch Functions

1	On	One-shot retract triggered by LS1
	Off	One-shot stop triggered by LS1
2	On	One-shot extend triggered by LS1
	Off	One-shot stop triggered by LS1
3	On	One-shot retract triggered by LS2 (Term 10)
	Off	One-shot stop triggered by LS2
4	On	One-shot extend triggered by LS2
	Off	One-shot stop triggered by LS2
5	Extend complete output Terminal 14 triggered by:	
	On	Current overload
	Off	LS1 (Term 9)
6	Retract complete output Terminal 15 triggered by:	
	On	Current overload
	Off	LS1 (Term 9)
7	On	After current sensing overload auto retract
	Off	After current sensing overload stop
8	On	After current sensing overload auto extend
	Off	After current sensing overload stop

Limit Switches

Industrial Devices Corporation offers “Normally Open” magnetic position sensors which interface directly with the D2300 to stop motion or initiate other functions. See page F-16.

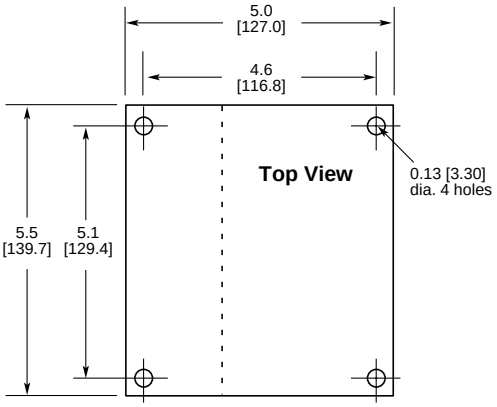
Specifications

Dimensions in [mm]

Board Only Models

D2200 Single Board: Depth 1.2 in. [30.48]

D2300 Two Boards: 2.1 in. [53.34]

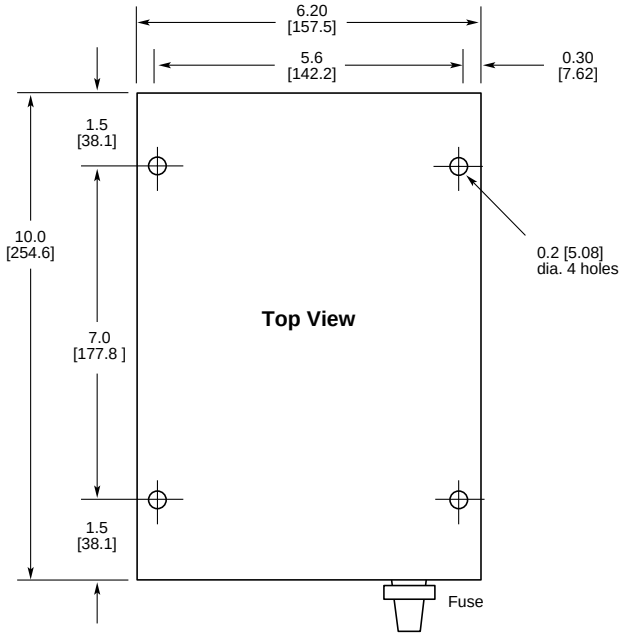


Chassis Models

D2201, D2301

D2202, D2302: Depth 2.9 in. [73.66]

D2203, D2303: Depth 3.6 in. [91.44]



How To Order

Model	Description
D2200	Board only
D2201	Board, Power Supply, Chassis
D2202	Board, Power Supply, Chassis w/ Enclosure
D2203	Board, Power Supply, Chassis w/ Enclosure, Push Buttons
Variable Speed Controls	
D2300	Board only
D2301	Board, Power Supply, Chassis
D2302	Board, Power Supply, Chassis w/ Enclosure
D2303	Board, Power Supply, Chassis w/ Enclosure, Push Buttons
Variable Speed w/ Time Delay Controls	
D2400	Board only
D2401	Board, Power Supply, Chassis
D2402	Board, Power Supply, Chassis w/ Enclosure
D2403	Board, Power Supply, Chassis w/ Enclosure, Push Buttons

Options	Description
-MOD 204	LS1 Hard EOT (D2200, D2300, D2400)
-MOD300	Remote Speed Potentiometers (D2300, D2400)
-MOD313	0–10 VDC Remote Speed Control Input (D2300, D2400)

To confirm your selection, review the checklist on page F-8.

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Specifications

Compatible Actuators:
NVD-L, N2D-L, EC2D-L

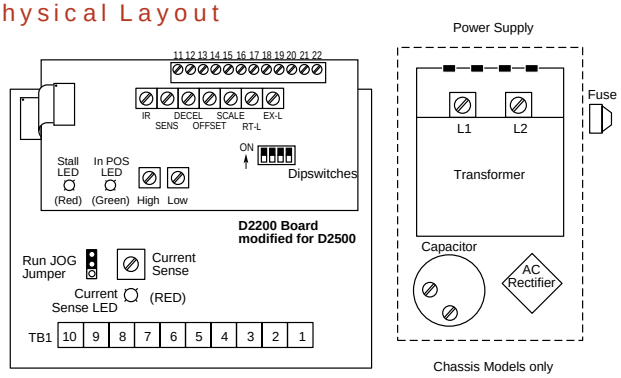
The D2500B Series is an analog position control which accepts an analog voltage or current command input and translates the signal into a proportional linear displacement. The control is used with electric cylinders containing a linear potentiometer (-L) option. Feedback from the linear potentiometer is proportional to distance. The control compares this feedback to the scaled command input, providing a closed loop linear positioning system.

NVD-L cylinders are available in standard lengths of 2, 4, 6, 8, 10 and 12 inches.

N2D-L cyclinders are available in standard lengths of 2, 4, 6, 8, 10, 12 and 18 inches.

EC2D-L cylinders are available in standard lengths of 50, 100, 150, 200, 300, 450, and 600 mm.

Physical Layout



Power Requirements

D2500B	20 to 30 VDC; 10 Amps maximum
D2501B, D2502B	105-125VAC; 50/60 Hz (from factory) @ 2 Amps max 208-245VAC; 50/60 Hz @ 1 Amp max (Jumper Selectable)
Motor Output	0-28 VDC, 5 Amps max (adjustable clamp: 0–5 Amps). Note: Motor rated for 4.5 Amps continuous; 10 Amps peak
Inputs	
Stop	Sinking Input (1K Pullup to 12 VDC) High Level (OFF) 10.5–12 VDC (open circuit high) Low Level (On) 0–0.5 VDC capable of sinking 100mA
Disable	Optically-Isolated, Sinking or Sourcing Input 10-30 VDC at 20mA max
Position Command	0-5 VDC, 0-10 VDC, or 4-20mA
Outputs	
Stall, IN POS	Open Collector (1K pullup to 12 VDC) High Level (OFF) 10.5-12 VDC (open circuit high) Low Level (ON) 0-5 VDC capable of sinking 100mA
Operational	
Variable Speed Range	15:1
PWM Frequency	2000Hz
Environmental	
Operating Temperature	32° to 122°F [0° to 50°C]
Storage Temperature	-40° to 185°F [-40° to 85°C]
Dimensions	See page F-26

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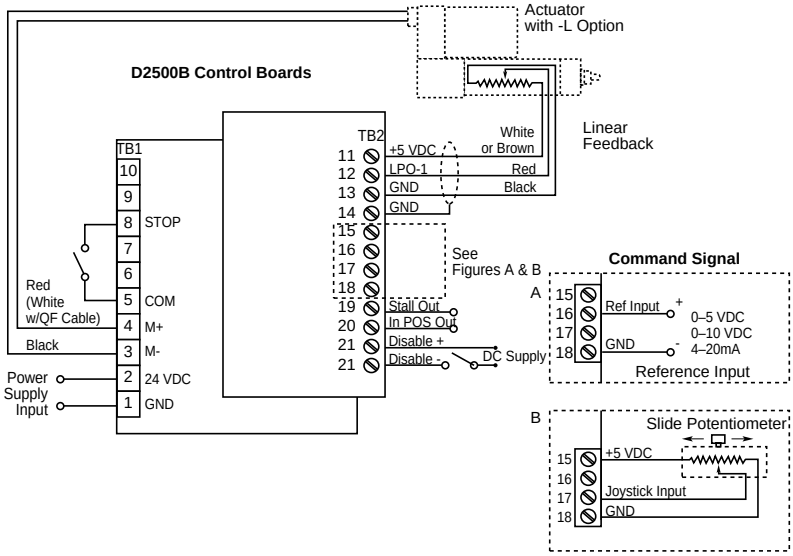
Specifications

Potentiometer Functions

Ten potentiometers are available to optimize system response and performance.

1. **Current Sense:** Sets the current draw to the motor, dictating the cylinder's thrust potential and stall threshold
2. **High:** Sets the main move velocity
3. **Low:** Sets the final creep speed prior to stopping (prevents overshoot).
4. **IR:** Sets the current regulation of the motor when the cylinder is traveling at low speeds with heavy loads.
5. **Sens:** Sets the system bandwidth, determining how close the feedback signal must be to the commanded signal before the cylinder is considered IN POSITION.
6. **Decel:** Sets the distance for the target position at which the cylinder deaccelerates to the final move speed.
7. **EX-L:** Sets the limit of travel in the Extend Direction.
8. **RT-L:** Sets the limit of travel in the Retract Direction.
9. **Scale:** Scales the Command Signal on the Reference Input down to 5 VDC (internally). Used with 0-10 VDC, 4-20mA.
10. **Offset:** Adjusts 4mA command signal to be equal to 0% cylinder extension.

Typical Wiring



Terminal Listing

TB1 10 Pin Terminal Strip

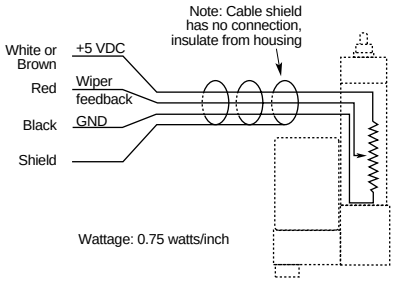
1	GND	External Supply Input: DC Ground
2	+24V	External Supply Input: +24 VDC
3	M–	Motor Negative Terminal
4	M+	Motor Positive Terminal
5	COM	DC Ground
8	STOP	Stop Input

TB2 12 Pin Terminal Connector

11	+5V	Linear Pot: +5 VDC Power Supply
12	LPO-1	Linear Pot: Wiper Input
13	GND	Linear Pot: DC Ground
14	GND	DC ground
15	+5V	+5 VDC Power Supply
16	REF INP	External Reference Input
17	Joystick INP	External Joystick Input
18	GND	DC Ground
19	Stall Out	Stall Output
20	IN POS Out	In Position Output
21	Disable+	Disable Input +
22	Disable–	Disable Input –

-L Linear Potentiometer Option

A linear potentiometer resides within the cylinder housing. The potentiometer wiper moves with the cylinder thrust tube, providing an analog feedback signal to the control, proportional to the linear displacement (i.e., 0 VDC = 0% stroke; 2.5 VDC = 50% stroke; and 5 VDC = 100% stroke).

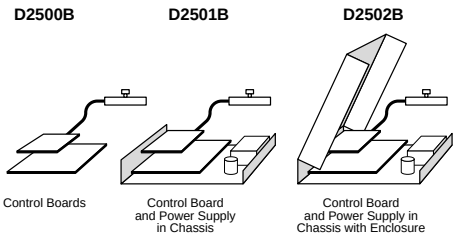


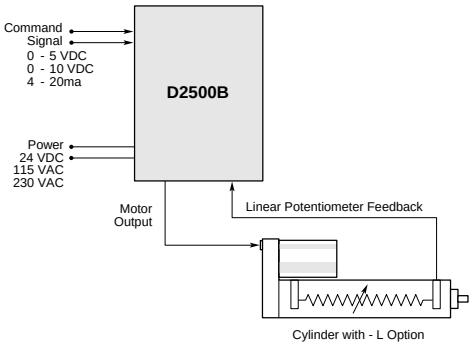
Specifications

D2500B Series

- Closed Loop Absolute Linear Positioning System.
- Accepts three types of remote analog command signals: 0 to 5 VDC, 0 to 10 VDC, and 4-20ma.
- Joystick Slide Pot – provided to give a 0-5 VDC command signal for initial testing and setup.
- 2 Inputs prevent cylinder motion – Stop and Disable.
- Dedicated Outputs.
  - Stall Output, when motor current exceeds current sensing threshold.
- LED Indicators to monitor system operation.
  - Stall Detect, In Position, and Current Sense.
- Tuning Potentiometers optimize system response and performance.
- Compatible with NV-D, N2-D and EC2-D Electric Cylinders with –L option.

D2500B Packaging Choices

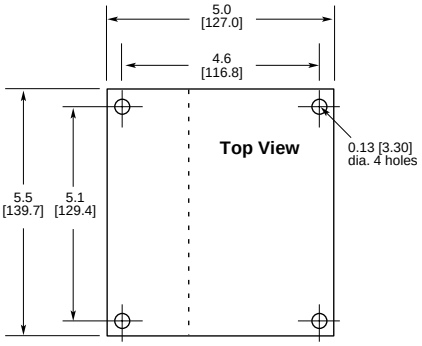




D2500B Dimensions in [mm]

Board Only Models

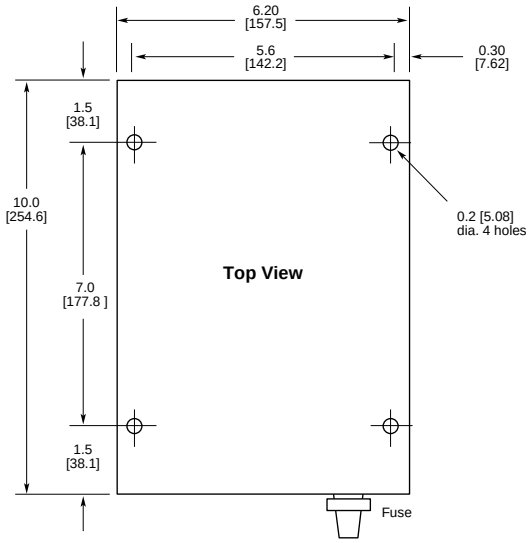
D2500B Two Boards: 2.1 in. [53.34]



Chassis Models

D2501B

D2502B: Depth 2.9 in. [73.66]



How To Order

Model	Description
D2500B	Board only
D2501B	Board, power supply, chassis
D2502B	Board, power supply, chassis with enclosure

Note: A potentiometer is included for set up and testing purposes.

To confirm your selection, review the checklist on page F-8.

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