

**SPECIFICATIONS:**

**POWER SUPPLY REQUIREMENTS:** + 10 VDC minimum with suffix AAA = 100  
 The maximum power supply voltage is + 30 volts DC. The positive supply at terminal number 1 must deliver a minimum of 15 ma. plus the output valve coil current requirement.

**EXTERNAL COMMAND SIGNAL:** None with suffix BBB = 000 + 3 volts dc with suffix BBB = 030  
 + 5 volts dc with suffix BBB = 050 + 10 volts dc with suffix BBB = 100

**INPUT IMPEDANCE AT TAB "A":** 100K ohms with suffix BBB = 030  
 166K ohms with suffix BBB = 050 331K ohms with suffix BBB = 100

**INPUT IMPEDANCE AT TAB "W":** 166K ohms with all BBB suffix identifiers

**RATED OUTPUT CURRENT:** + 25 ma. and + 50 ma. with suffix CCC = 500  
 + 50 ma. and + 100 ma. with suffix CCC = 101  
 + 75 ma. and + 150 ma. with suffix CCC = 151  
 + 100 ma. and + 200 ma. with suffix CCC = 201  
 The valve driver can be configured to deliver either the high or low current values listed above with the range select jumper.

**OUTPUT CURRENT LIMIT:** The current limit will be approximately 150% of the rated output current as defined by suffix CCC and the range select jumper..

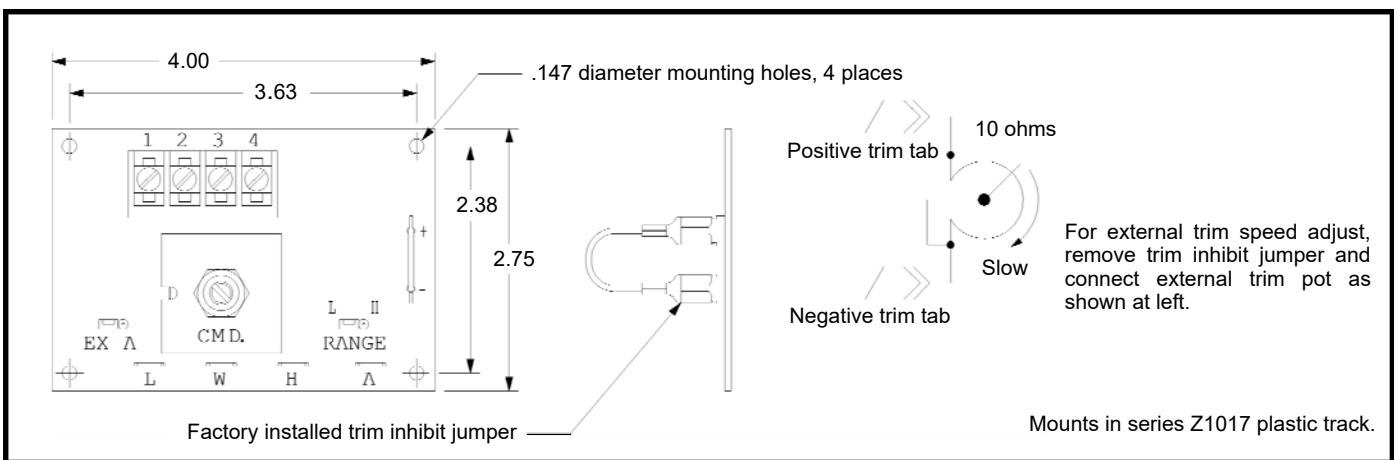
**OUTPUT CURRENT TOLERANCE:** Without the maximum trim potentiometer installed the output current shall not be less than nor more than 20% greater than the nominal value as defined by suffix CCC.

**MAXIMUM CURRENT ADJUSTMENT RANGE:** 50% to 100% of the rated output current.  
 In order to use this function the optional maximum trim potentiometer assembly, part number C2509-010-100-000-00 must be installed in place of the factory supplied trim inhibit jumper.

**STABILITY AND DRIFT:** Better than 1% of maximum with inner loop current feedback.

**OPERATING TEMPERATURE RANGE:** - 20 degrees C to + 55 degrees C.  
 Extended temperature range operation is available, contact Datatran's Sales Department for availability and price.

**OUTLINE DIMENSIONS:**



**GENERAL DESCRIPTION:**

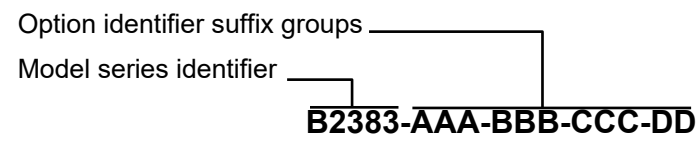
This linear valve driver module is designed to be used for unidirectional open loop motion and speed control systems. The output is unipolar and will drive all servo valves and pump displacement controllers that have coil current requirements up to 200 ma. The command signal can be generated from either a potentiometer or external voltage source.

This industrial grade module is a true high performance linear current regulator. It incorporates a stable reference and current loop feedback to maintain the output signal to the valve coil within 1% of the setpoint as the load impedance, input voltage, and ambient temperature are varied over the specified range. This linear valve drivers uses a single ended output driver and is not recommended for use with systems that have rapidly changing input command signals.

Each linear valve driver module includes an optional internal command potentiometer as well as a range select jumper and provisions for a maximum output trim adjust potentiometer. The module also contains provisions for the use of an external command potentiometer or the ability to follow a remote command voltage signal. The output current to the valve coil will vary from zero to the maximum as the input signal is adjusted from zero to the rated value. The module requires a positive 10 to 30 volt DC power supply for operation.

The circuit board is solder masked. All external power and valve coil connections are made to a barrier type terminal block with #6-32 captive wire clamping plates. External command signals are made to .25 inch male tabs. All external connections are clearly marked on the board.

**PART NUMBERING SYSTEM:**



PART NUMBER SUFFIX GROUP EXPLANATION	
SUFFIX	DESCRIPTION
AAA	Minimum power supply voltage
BBB	Maximum input signal voltage
CCC	Maximum output current to valve coil
DD	Factory installed option identifier

Parts shipped from the factory will have the correct alphanumeric option identifier in place of the suffix letters indicated in the table above.

**ORDERING INFORMATION:**

Refer to the B2383 model series selection sheet for a complete listing of the currently available models.

**DATA SHEET  
 FOR  
 DATATRAN  
 B2383  
 LINEAR VALVE DRIVER  
 BOARD  
 (UNIDIRECTIONAL)**

FOR TECHNICAL ASSISTANCE CONTACT  
 CONIC SYSTEMS INC.  
 11 REBEL LANE, PORT JERVIS, NY 12771  
 TEL: (845) 856-4313 FAX (845) 858-2824  
 www.conicsystems.com

## APPLICATION INFORMATION:

**LOAD IMPEDANCE:** The maximum and output load resistance can be calculated from the formula given below:

$$Z(\text{Load maximum}) = \frac{\text{Power supply voltage} - 2}{\text{Rated load current}}$$

The minimum load impedance shall not be less than 10 ohms.

**SIGNAL SELECT (EX-A) JUMPER:** When the valve driver is supplied with the internal command potentiometer, it will also include a signal source select jumper. This jumper is a three position pin header and shorting bar located next to the bracket. It is marked "EX-A". This jumper is used to select the input signal source, either the internal command potentiometer or an external command potentiometer or voltage source can be used as the input signal. The jumper position depends on the signal source as described in the sections below. Valve drivers supplied without the internal command potentiometer will not have the signal select jumper installed.

**OUTPUT RANGE SELECT (L-H) JUMPER:** Each valve driver is supplied with the ability to deliver current over two output ranges. The amount of current delivered with the rated input voltage command applied is determined by the position of the range select jumper and the model ordered as defined by suffix CCC. With the jumper in the "H" position the output will be at the highest value as defined by suffix CCC. With the jumper in the "L" position the maximum current delivered to the connected load will be approximately one half the value available in the high, "H" position.

**EXTERNAL VOLTAGE COMMAND SIGNAL:** The valve driver is capable of following an external voltage signal. This signal should be applied to tabs "A" and "L". The common (0 volt) side of the external signal must be connected to tab "C". The "EX-A" jumper must be removed or placed in the "A" position. Note that the external signal and the amplifier must share the same reference potential. The valve driver does not provide signal isolation.

**EXTERNAL COMMAND POTENTIOMETER:** The valve driver can be used with a remote command potentiometer. This potentiometer uses the amplifier's internal +5 volt reference and should be connected to tabs "H", "L" and "W". In the event that this option is used the "EX-A" jumper must be removed or placed in the "A" position. The internal command potentiometer, if installed, is disabled.

User supplied external command potentiometers should have a linear taper with a value between 1000 and 5000 ohms and be rated .5 watt, minimum.

**INTERNAL COMMAND POTENTIOMETER:** The valve driver can be supplied with a built-in command potentiometer mounted on the module. In the event that this potentiometer is used to set the amplifier output the "EX-A" jumper must be placed in the "EX" position.

**INTERNAL REFERENCE VOLTAGE:** A nominal +5 volts DC is available at tab "H" for powering external loads. The maximum output current from this supply must be limited to 10 ma.

**EXTERNAL MAXIMUM OUTPUT CURRENT LIMIT ADJUSTMENT:** The maximum valve driver output current can be controlled by the use of an external resistor connected between the "+" and "-" tabs. The maximum output current can be limited to values less than the rated value only. The selected resistor should be adjustable between zero and 10 ohms. The higher the resistance value, the lower the maximum output current.

**The valve driver will not operate without either an external resistor or the factory supplied jumper connected between the "+" and "-" tabs.**

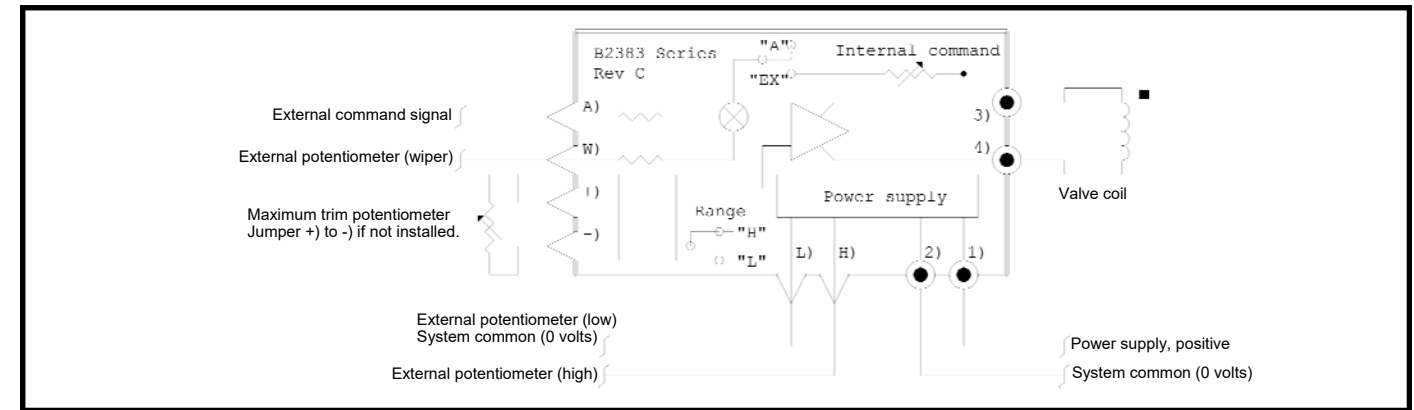
**EXTERNAL IMPEDANCE:** The linear valve driver can be operated with command input voltage signals other than those defined by suffix BBB. This signal should be applied to the "A" tab. The common (0 volt) side of the external signal must be connected to the "L" tab. The jumper marked "EX-A" must be removed or placed in the "A" position. Note, the external signal and the valve driver must share the same reference potential. The valve driver does not provide signal isolation. The external resistor must be placed in series with the input. The value of this external resistor can be calculated from the formula below.

**EXTERNAL WIRING:** External command signals should be twisted and shielded cable. All shields should be terminated at

$$R(\text{external, in ohms}) = (\text{External signal voltage} - \text{Rated voltage, suffix BBB}) * 33167$$

terminal 2 on the amplifier only. Do not expose or connect the shield at any point in its run from the signal source to the valve driver module. Connections to the power supply and the valve coil need not be shielded, however a reasonable effort should be made to route this cable away from equipment generating electrical noise. For optimum performance, in an environment with high electrical noise, all external connections to the valve driver should be via shielded cable.

## FUNCTIONAL DIAGRAM:



### !!!! WARNING !!!!

Do not apply voltages less than the system common (0 volt) value to either the "A" or "W" tabs. Negative voltages applied to the "A" or "W" tab may cause the valve driver to apply the full power supply voltage to the connected valve coil.

## APPLICATION EXAMPLES:

The top example shows the connections required to utilize the internal reference supply with an external setpoint potentiometer, also shown is a maximum output trim adjustment control. The bottom example shows the connections required to enable the driver to follow an external voltage command signal.

