SPECIFICATIONS:

POWER SUPPLY REQUIREMENTS: +/- 10 VDC minimum with suffix AAA = 100

+/- 15 VDC minimum with suffix AAA = 150

The maximum power supply voltage is + 30 volts DC. The positive and negative power supplies must deliver a minimum of 40 ma. plus the external transducer current requirement.

TRANSDUCER POWER SUPPLY VOLTAGE: +/- 8 volts dc with suffix AAA = 100

+/- 12.5 volts dc with suffix AAA = 150

TRANSDUCER POWER SUPPLY CURRENT: +/- 250 ma., maximum for each output.

REFERENCE POWER SUPPLY VOLTAGE +/- 4.98 to +/- 5.01 volts dc for all models.

REFERENCE POWER SUPPLY REGULATION: +/- 50 mv with a 2 ma. load (0 to 55 degrees C.)

The maximum current from either reference power supply output must be limited to 5 ma.

RATED INPUT VOLTAGE SIGNALS: +/- 3 volts dc with suffix BBB = 030

+/- 5 volts dc with suffix AAA = 050 +/- 10 volts dc with suffix AAA = 100

Bipolar signals must be applied to terminal number 8. Terminal number 9 will accept positive going signals, only. All inputs will withstand up to +/- 100 volts dc without damage.

INPUT SIGNAL IMPEDANCE: The input impedance at terminal numbers 8 and 9 is 100K ohms.

INPUT SIGNAL DEADBAND: Factory set to 60 mv., +/- 20 mv.

The deadband is included to prevent the module from providing simultaneous outputs on terminals 16 and 17. The input signal must exceed the deadband level for ramping to occur.

CROSS CONDUCTION INTERLOCK: The output signal will always ramp to zero prior to reversal.

RATED OUTPUT VOLTAGE SIGNALS: . +/- 3 volts dc with suffix CCC = 030

+/- 5 volts dc with suffix CCC = 050 +/- 10 volts dc with suffix CCC = 100

Bipolar output signals are available at terminal number 15. Terminal numbers 16 and 17 provide positive going output signals, only.

RATED OUTPUT SIGNAL CURRENT: +/- 5 ma., maximum with all suffix CCC versions.

The output current is specified with the input power supply set to +/- 10 volts dc.

OUTPUT VOLTAGE STABILITY AND DRIFT: Better than 1% at unity gain.

POSITIVE AND NEGATIVE RAMP TIMES: Times shown are with a 100% step change of the input voltage.

Range select jumpers set to:	Low range (L):	1 second (fast) to 10 seconds (slow).
	Mid range (M):	5 seconds (fast) to 50 seconds (slow).
	High range (H):	25 seconds (fast) to 250 seconds (slow).

The positive and negative ramp rates are separately adjustable within the selected range.

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.

GENERAL DESCRIPTION:

This quad ramp generator is designed to provide bidirectional acceleration and deceleration command signals in reversing motion control applications. Acceleration and deceleration times in both the forward and reverse directions can be set independently of one another. The output signal will change at a linear rate to follow step changes at the input. The linear ramps in each direction are adjustable and can be set to provide times between 1 and 250 seconds. The input signal can either be bipolar or obtained from two separate positive voltage sources. A single bipolar and two positive output signals are available.

This industrial grade module provides voltage outputs that will track the input command signal within 1% as the ambient temperature and power supply voltage vary over the specified limits. The module includes a regulated bipolar 5 volt DC reference supply that can be used with an external potentiometer. The bipolar output is normally used as the input signal for servovalves or pump electrical displacement controllers. The two positive going only outputs are used to supply the command signal to drive the solenoids on dual coil proportional valve applications.

Four controls are included to set the positive and negative linear ramp rates for the forward and reverse directions. All of the adjustments are independent. Selection of the input signal, either a single bipolar or two separate positive signals, is determined by the user via the position of a board mounted jumper. The module requires a bipolar 10 to 30 volt DC power supply for operation.

The circuit board is solder masked. All external connections are made to barrier type terminal block with #6-32 captive wire clamping screws. All external connections and controls are clearly marked

PART NUMBERING SYSTEM:

Option identifier suffix groups

Model series identifier

C2716-AAA-BBB-CCC-DD

PART NUMBER SUFFIX GROUP EXPLANATION	
SUFFIX	**DESCRIPTION**
AAA	Minimum power supply voltage
BBB	Maximum input signal voltage
CCC	Maximum output signal voltage
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.

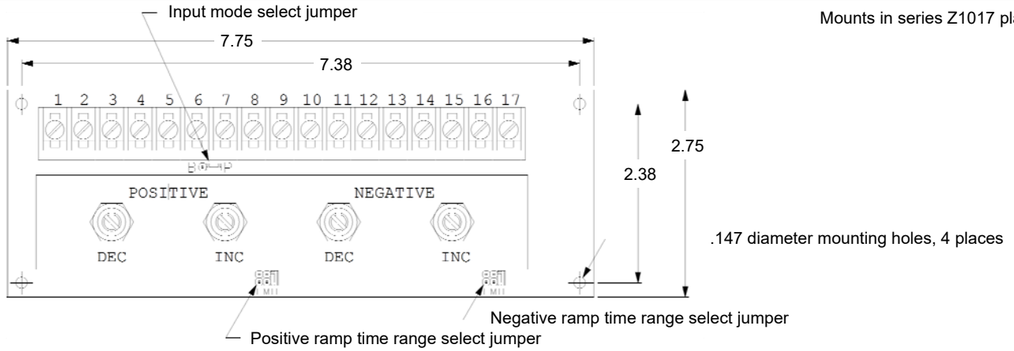
ORDERING INFORMATION:

Refer to the C2716 model series selection sheet for a complete listing of the currently available models.

DATA SHEET FOR DATATRAN C2716 QUAD LINEAR RAMP GENERATOR

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

OUTLINE DIMENSIONS:



APPLICATION INFORMATION:

SIGNAL SELECT (B-P) JUMPER: This jumper is a three position pin header and shorting bar located between the bracket and the terminal block. It is marked “B"-"P”. This jumper is used to select the type of input signal. With the jumper in the "B" position the board will operate with a bipolar input signal. With the jumper in the "P" position, the board will operate with two positive input signals.

RAMP RANGE SELECT (L-M-H) JUMPERS: These jumpers are three position, dual row, pin headers and shorting bars located just below the bracket on the edge of the board. One is supplied for the positive direction ramp range while the other will select the negative direction ramp range The minimum and maximum ramp times within the selected range are set with the increase and decrease ramp adjust controls.

INCREASE AND DECREASE RAMP ADJUST CONTROLS: The increase control will adjust the ramp time when the input is changing away from zero. The negative control will adjust the ramp time when the input signal is changing towards zero. Clockwise rotation of the controls will increase the ramp times.

BIPOLAR VOLTAGE COMMAND SIGNAL: The ramp generator is capable of following a bipolar voltage signal applied to terminal number 8. The signal select jumper must be in the "B" position.

A positive voltage input signal on terminal number 8 will produce a positive voltage output signal on terminal numbers 15 and 17. Terminal number 16 will be at zero volts. The ramp times are adjusted with the "POSITIVE" controls.

A negative voltage input signal on terminal number 8 will produce a negative voltage output signal on terminal numbers 15 and 16. Terminal number 17 will be at zero volts. The ramp times are adjusted with the "NEGATIVE" controls.

POSITIVE VOLTAGE COMMAND SIGNALS: The ramp generator is capable of following two positive voltage signals applied to terminal numbers 8 and 9. The signal select jumper must be in the "P" position.

A positive voltage input signal on terminal number 8 will produce a positive voltage output signal on terminal numbers 15 and 17. Terminal number 16 will be at zero volts. The ramp times are adjusted with the "POSITIVE" controls.

A positive voltage input signal on terminal number 9 will produce a negative voltage output signal on terminal numbers 15 and 16. Terminal number 17 will be at zero volts. The ramp times are adjusted with the "NEGATIVE" controls.

EXTERNAL RAMP CONTROL: The positive and negative ramp rates can be externally controlled by adding a resistor between terminals 11 and 12 for positive inputs or between 13 and 14 for negative inputs. The internal range select jumpers should be in the high (H) position for external control. The resistor value required for a specified time can be calculated using the formula below:

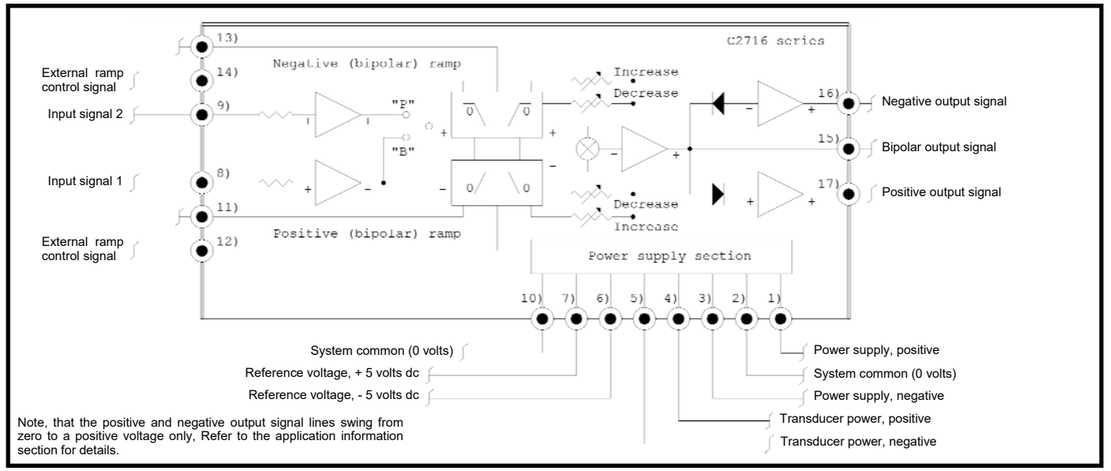
R(external, in ohms) = (1012500 * seconds) / (112.6 - (4.5 * seconds))

The formula above assumes that the ramp controls are set to the fast (c'clockwise) position. With the controls set to the slow (clockwise) position the ramps times will increase by a factor of 10. Shorting terminals 11 and 12 or 13 and 14 will disable the positive and negative ramps.

SIGNAL ISOLATION: The common (0 volt) side of all the external signals must be connected to terminal number 10 on the amplifier. Note that the external signals and the amplifier power supply must share the same reference potential. *The amplifier does not provide signal isolation.*

EXTERNAL WIRING: External command signals should be twisted and shielded cable. All shields should be terminated at 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 module. Connections to the power supply need not be shielded, however a reasonable effort should be made to route this cable away from equipment generating electrical noise. For optimum performance, all external connections to the module should be via shielded cable

FUNCTIONAL DIAGRAM:



APPLICATION EXAMPLE:

The figure below illustrates the relationship between the input signal, ramp adjustment controls and the output signals for both positions of the input mode select jumper. Notice that a change in the input signal, denoted by the "FORWARD" and "REVERSE" on periods or both signals going from the current value to zero does not immediately effect the ramped outputs. Output signals will always ramp to zero prior to responding to a change in the input signal.

The top example, using two positive input signals may be used to produce bidirectional motion profiles with dual solenoid proportional valves. The terminal 17 output would be connected to the controller for solenoid A while the terminal 16 output would be connected to the controller for solenoid B.

The bottom example illustrates the ramp relationship with a bipolar input signal. Terminal 17 with the bipolar output can be used to drive a bidirectional servovalve controller. The two positive outputs on terminal numbers 16 and 17 may be used for dual solenoid valve control as described above.