

TABLE 4.1 Potentiometer Function Details

Potentiometer	Description
Loop Gain Adjustment	This potentiometer must be set completely counter-clockwise in Current Mode. In Velocity, Voltage, or Duty Cycle Mode, this potentiometer adjusts the gain in the velocity forward position of the closed loop. Turning this potentiometer clockwise increases the gain. Start from the full counter-clockwise position, turn the potentiometer clockwise until the motor shaft oscillates, then back off one turn.
Current Limit	<p>This potentiometer adjusts the current limit of the drive. To adjust the current limit, first use any available DIP switches or external current limiting resistors to set the maximum current limits and ratios (consult drive datasheet to see which options are available). If further adjustment is necessary, use the following equation to determine the number of clockwise turns from the full counter-clockwise position necessary to set the desired current limit:</p> $\# \text{ of turns (from full CCW)} = \left(\frac{I_{\text{system}}}{I_{\text{max}}} \right) 12 + 1$ <p>I_{system} = the desired current limit of the system (typically determined by motor current rating) I_{max} = maximum current capability of the drive; this value is determined after any external current limiting resistors have been used and/or any current scaling or current reduction DIP switches have been set. If no DIP switches or external resistors have been used, then I_{max} is the default maximum continuous current limit set by the drive hardware. See "Current Limiting Procedure" on page 44 for an example of how to use this potentiometer.</p>
Reference Gain	This potentiometer adjusts the ratio between the input signal and the output variable (voltage, current, velocity, or duty cycle). For a specific gain setting, turn this potentiometer fully counter-clockwise, and adjust the command input to 1V. Then turn clockwise while monitoring motor velocity or drive output voltage (depending on mode of operation) until the required output is obtained for the given 1V command. Turning this potentiometer counter-clockwise decreases the reference in gain, while setting this potentiometer in the fully clockwise position makes the whole range of drive output available. This potentiometer may be left in the fully clockwise position if a controller is used to close the velocity or position loops.
Test/Offset	<p>This potentiometer acts as an internal command source for testing when the Test/Offset switch is in the ON position. If the Test/Offset switch is in the OFF position, then this potentiometer can be used to adjust a small amount of command offset in order to compensate for offsets that may be present in the servo system. Turning this potentiometer clockwise adjusts the offset in a negative direction relative to the +Ref input command.</p> <p>Before offset adjustments are made, the reference inputs must be grounded or commanded to 0 volts.</p>
Ramp Time	This potentiometer sets the ramp time for the command input signal. The ramp time can be set for up to 30 seconds in reaching the max command by adjusting the potentiometer fully clockwise. Ramping rates are linear with respect to time and apply to both directions of motion.

Test Points for Potentiometers After the potentiometer adjustments have been completed, the resistance values can be measured for future adjustments or duplication on other servo drives of the same part number. Test points for potentiometer wipers are provided and are located at the foot of all four potentiometers. Resistance measurements are only to be used to duplicate drive settings, since some potentiometers have other resistors in series or parallel. Measure the resistance between the test point and the outer leg of the potentiometer or between the test point and an appropriate ground. See the block diagram on the drive datasheet to determine which ground should be used for each potentiometer.



Notice

Before taking potentiometer resistance measurements, make sure that all potentiometers and DIP switches have been set to the desired settings, and that all I/O and Feedback cables have been removed from the drive, as these can affect resistance measurements.

Potentiometer Tool ADVANCED Motion Controls offers a tool for adjusting the potentiometers, part number PT01. This tool features an exposed stainless steel blade on one end and a recessed stainless steel blade on the other end. Contact customer service for ordering information.