













SW-2	Description	Setting	
		On	Off
2-1	Mode Selection. See Mode Selection Table below for full description of mode switch settings.	Current Mode	Velocity Modes
2-2	Hall Velocity feedback. This connects the internally generated velocity signal from the Hall sensors.	Hall sensor velocity feedback enabled.	Hall sensor velocity feedback disabled.
2-3	Encoder Velocity feedback. This connects the internally generated velocity signal from the encoder.	Encoder velocity feedback enabled.	Encoder velocity feedback disabled.
2-4	Velocity Feedback Polarity	Toggles the polarity of the velocity feedback signal (Encoder or Hall velocity mode only).	
2-5	Duty Cycle feedback. This connects the internally generated velocity signal from the output stage.	Duty cycle feedback enabled.	Duty cycle feedback disabled.
2-6	Voltage Mode.	Voltage feedback enabled.	Voltage feedback disabled.
2-7	IR Compensation Mode.	IR Comp enabled.	IR Comp disabled.
2-8	Velocity Loop Integrator Capacitor Switches. These adjust the value of the integrator capacitor in the velocity mode.	See Velocity Loop Integrator Capacitance Table below.	
2-9			
2-10			

\*Important Note: Drive will not operate properly with more than one of these switches ON due to multiple feedback signals.

#### Mode Selection Table

Operating modes can be selected by setting SW2 DIP switches according to the following table.

	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	SW2-7
CURRENT	ON	OFF	OFF	X	OFF	X	OFF
DUTY CYCLE	OFF	OFF	OFF	X	ON	X	OFF
VOLTAGE	OFF	OFF	OFF	X	OFF	ON	OFF
IR COMP	OFF	OFF	OFF	X	OFF	ON	ON
HALL VELOCITY	OFF	ON	OFF	X	OFF	ON	OFF
ENCODER VELOCITY	OFF	OFF	ON	X	OFF	X	OFF
TACHOMETER	OFF	OFF	OFF	X	OFF	X	OFF

X = does not affect mode

#### Velocity Loop Integrator Capacitance Table

Set the Velocity Loop Integrator Capacitance value according to the following table. Decreasing the capacitance increases the integrator gain.

μF	SW2-8	SW2-9	SW2-10
0.5	OFF	OFF	OFF
1.0	ON	OFF	OFF
1.5	OFF	ON	OFF
2.0	ON	ON	OFF
2.5	OFF	OFF	ON
3.0	ON	OFF	ON
3.5	OFF	ON	ON
4.0	ON	ON	ON

### Current Loop Tuning Values

SW3 DIP switches add additional resistance and capacitance to the current loop tuning circuitry. SW3 switches 1-5 add additional parallel capacitance to the current loop integrator capacitor, and SW3 switches 6-10 add additional series resistance to the current loop gain resistor (see Block Diagram). Capacitance and resistance values are given in the tables below along with the appropriate DIP switch settings.

SW3																	
Switch	Additional Current Loop Integrator Capacitance ( $\mu\text{F}$ ) – (decreasing the capacitance increases the integrator gain)																OPEN
	SHORT	.082	.077	.072	.067	.062	.057	.052	.047	.035	.030	.025	.020	.015	.010	.005	
1	ON	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
2	ON	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
3	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
4	ON	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

SW3																	
Switch	Additional Current Loop Gain Resistance ( $\text{k}\Omega$ ) – (increasing the resistance increases the proportional gain)																
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
6	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	
7	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	
8	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	
9	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
10	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	
Switch (continued)	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	
6	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	
7	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	
8	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	
9	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
10	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	

### Potentiometer Functions

Potentiometer	Description	Turning CW
Pot 1	Loop gain adjustment in open loop and velocity modes. Turn this pot fully CCW in current mode.	Increases loop gain
Pot 2	Current limit. Adjusts both the continuous and peak current limit while maintaining the continuous/peak ratio set by the DIP Switches.	Increases current limit
Pot 3	Reference in gain. This potentiometer adjusts the ratio between input signal and output variables (voltage, current, and velocity).	Increases reference input gain
Pot 4	Test/Offset. Used to adjust any imbalance in the input signal or in the drive. When SW1-1 (DIP switch) is ON, the sensitivity of this pot is greatly increased allowing it to be used as an on-board signal source for testing purposes.	Zero speed setting is at the midpoint of this 14-turn pot.
Pot 5	Ramp Time. Sets the ramp time for the command input signal.	Increases ramp time (slower Accel or Decel)

Note: Potentiometers are approximately linear and have 12 active turns with 1 inactive turn on each end.

### Ramping Command (Pot 5):

The built-in ramp circuit allows the command input to be ramped linearly. This feature is activated by setting SW1-8 = ON. The ramp time can be set for up to 30 seconds in reaching the max command by adjusting Pot 5 fully clockwise. Ramping rates are linear with respect to time and apply to both directions of motion. For example, if the single-ended command input is only 2.5 Volts, the time to ramp to this voltage would be half the time to ramp to 5 Volts.



**Through-hole Components†**

Location	Description
RF1	IR Compensation Scaling. Through-hole resistor that can be added to configure the amplifier for IR Compensation mode. See section below on IR Compensation Notes for more details.

*IR Compensation Notes*

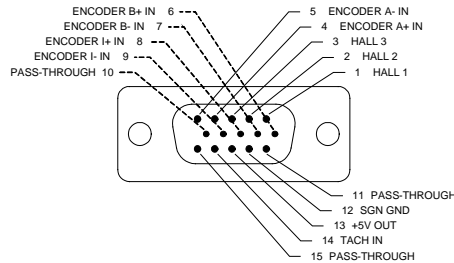
For applications that will use IR Compensation mode, a resistor can be added to the location named in the table above. The combination of the added resistor and correct DIP switch settings will configure the amplifier for IR Compensation mode. While in IR Compensation mode, the amplifier will adjust the duty cycle to compensate for changes in the output current. Consult the amplifier's functional block diagram and the manufacturer's website for more information.

**†NOTE: DAMAGE DONE TO THE DRIVE WHILE PERFORMING THESE MODIFICATIONS WILL VOID THE WARRANTY.**

**MECHANICAL INFORMATION**

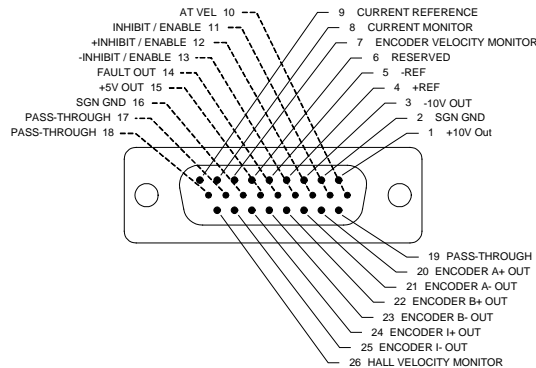
**Feedback Connector**

Connector Information		15-pin, high-density, female D-sub
Mating Connector	Details	TYCO: Plug P/N 748364-1; Housing P/N 5748677-1; Terminals P/N 1658670-2 (loose) or 1658670-1 (strip)
	Included with Drive	No



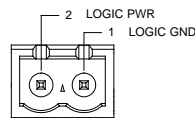
**I/O Signal Connector**

Connector Information		26-pin, high-density, female D-sub
Mating Connector	Details	TYCO: Plug P/N 1658671-1; Housing P/N 5748677-2; Terminals P/N 1658670-2 (loose) or 1658670-1 (strip)
	Included with Drive	No



**Logic Power Connector**

Connector Information		2-pin, 5.08 mm spaced, enclosed, friction lock header
Mating Connector	Details	Phoenix Contact: P/N 1757019
	Included with Drive	Yes



**Fan Power Connector**

Connector Information		2-port, 5.08 mm spaced, enclosed, friction lock header
Mating Connector	Details	Phoenix Contact: P/N 1757019
	Included with Drive	Yes

**Motor Power Connector**

Connector Information		4-pin, 10.16 mm spaced, enclosed, friction lock header
Mating Connector	Details	Phoenix Contact: P/N 1913523
	Included with Drive	Yes

**DC Power Connector**

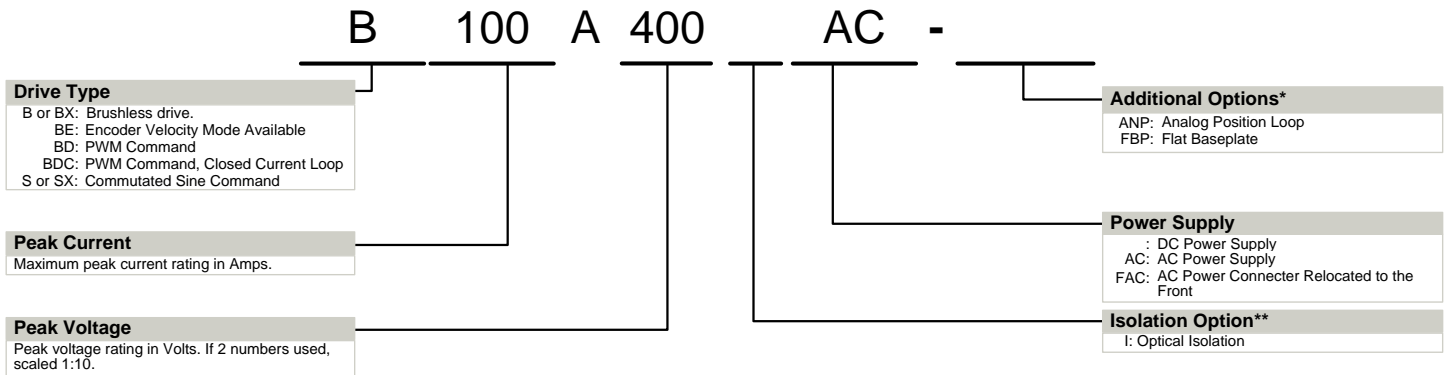
Connector Information		4-pin, 10.16 mm spaced, enclosed, friction lock header
Mating Connector	Details	Phoenix Contact: P/N 1913523
	Included with Drive	Yes

**AC Power Connector**

Connector Information		4-pin, 10.16 mm spaced, enclosed, friction lock header
Mating Connector	Details	Phoenix Contact: P/N 1913523
	Included with Drive	Yes



**PART NUMBERING INFORMATION**



\* Options available for orders with sufficient volume. Contact *ADVANCED* Motion Controls for more information.

\*\* Isolation comes standard on all AC supply drives and most DC supply drives 200V and above. Consult selection tables of the website or drive datasheet block diagram to see if isolation is included.

DigiFlex® Performance™ series of products are available in many configurations. Note that not all possible part number combinations are offered as standard drives. All models listed in the selection tables of the website are readily available, standard product offerings.

*ADVANCED* Motion Controls also has the capability to promptly develop and deliver specified products for OEMs with volume requests. Our Applications and Engineering Departments will work closely with your design team through all stages of development in order to provide the best servo drive solution for your system. Equipped with on-site manufacturing for quick-turn customs capabilities, *ADVANCED* Motion Controls utilizes our years of engineering and manufacturing expertise to decrease your costs and time-to-market while increasing system quality and reliability. Feel free to contact Applications Engineering for further information and details.

**Examples of Customized Products**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>▲ Optimized Footprint</li> <li>▲ Private Label Software</li> <li>▲ OEM Specified Connectors</li> <li>▲ No Outer Case</li> <li>▲ Increased Current Resolution</li> <li>▲ Increased Temperature Range</li> <li>▲ Custom Control Interface</li> <li>▲ Integrated System I/O</li> </ul> | <ul style="list-style-type: none"> <li>▲ Tailored Project File</li> <li>▲ Silkscreen Branding</li> <li>▲ Optimized Base Plate</li> <li>▲ Increased Current Limits</li> <li>▲ Increased Voltage Range</li> <li>▲ Conformal Coating</li> <li>▲ Multi-Axis Configurations</li> <li>▲ Reduced Profile Size and Weight</li> </ul> |
|--|--|

**Available Accessories**

*ADVANCED* Motion Controls offers a variety of accessories designed to facilitate drive integration into a servo system. Visit [www.a-m-c.com](http://www.a-m-c.com) to see which accessories will assist with your application design and implementation.



All specifications in this document are subject to change without written notice. Actual product may differ from pictures provided in this document.