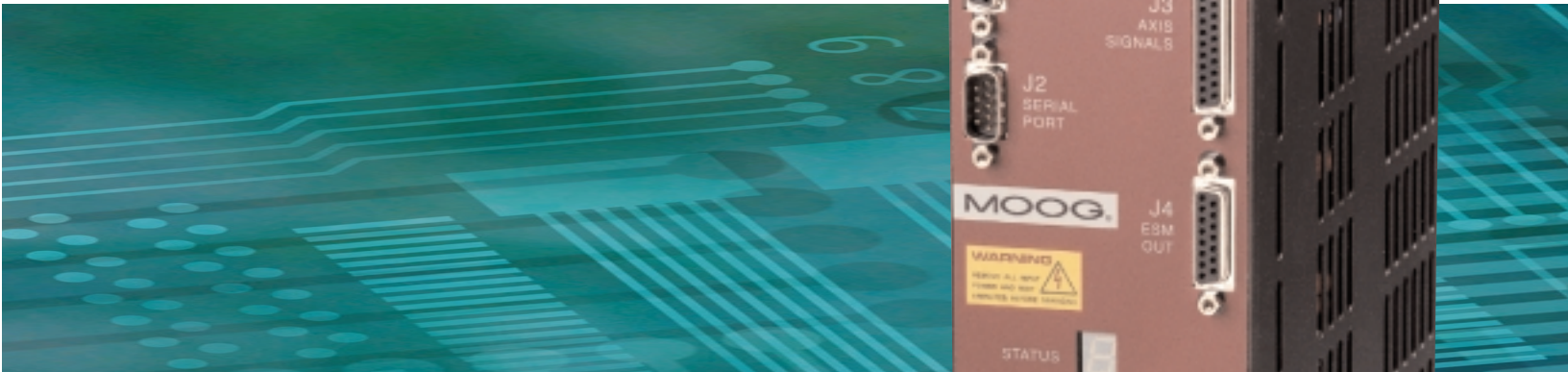


# MOOG

## L180 Series Digital Servo Drive



CE



## SERVO DRIVE FEATURES

- **High Dynamics.** Digital control loops with high bandwidth response and advanced signal processing algorithms deliver even greater torque out of Moog's high power density servo motors.
- **Smooth Low Speed Performance.** Full PID control loops, sinusoidal commutation and Moog's low cogging G400 series motors all combine to deliver smooth low speed performance.
- **Simplified Installation and Wiring.** The highly integrated design offers high voltage and logic voltage supplies, servo amplifier, limit switch inputs and high power regen (3.8 kW peak) all within a compact enclosure to reduce wiring runs and free-up valuable real estate.
- **High Reliability.** Integral cooling fans and a multi-tiered fault protection system are designed to provide years of reliable operation in demanding industrial environments. Fault protection schemes include motor and drive thermal monitoring, software based I<sup>2</sup>t protection and hardware based current limiting.
- **Quick and Easy Setup.** Moog Windows® based interface for the L180 includes a virtual oscilloscope, data logger and drive status displays to simplify setup and system commissioning.
- **Value Priced.** Targeted for +/- 10 VDC control applications, the streamlined design makes high performance servo control affordable.

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## OPERATING MODES

- **Analog Current (Torque) Mode.** Motor current (torque) controlled by +/- 10 VDC command reference.
- **Analog Velocity Mode.** Motor velocity controlled by +/- 10 VDC command reference.
- **Digital Current (Torque) Mode.** Motor current (torque) controlled by command message transmitted over serial link.
- **Digital Velocity Mode.** Motor velocity controlled by command message transmitted over serial link.

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## DRIVE SPECIFICATIONS

### Servo Drive Ratings

Model	Output Current (Arms)		Output Power (kW)		Regen Power (W)	
	Continuous	Peak	Continuous	Peak	Continuous	Peak
L180						
-310	5	10	2.0	4.0	300	3800
-410	10	20	4.0	8.0	300	3800
-510	15	35	6.0	14.0	300	3800

### AC Mains Input Power

185-255 vac  
50/60 Hz  
Single or Three Phase

### DC Backup Logic Input Power (optional)

Unregulated DC  
Voltage range 24 VDC ±25%  
500 mA DC @ 24VDC

### Internal Regen Resistor

3.8 kW Peak  
300 W Continuous

### Analog Input

Velocity or Torque Mode Reference Input  
Differential Inputs (8k ohm input impedance)

### Digital Inputs (4)

Supply voltage Range 12-28 VDC  
Polarity Current Activated (Configurable as Sink or Source)  
Isolated Inputs (4.7k Ω Input Impedance)

### Relay Outputs

Ready Relay, 0-30 VDC, 200 mA max

### Communications

RS232, 9.6 kbaud

### Position/Transducer Interface

Resolver Input  
Encoder Simulation (programmable 8-8192)

## DRIVE SPECIFICATIONS (cont.)

### Fault Protection

- Overvoltage
- Undervoltage
- Output Phase to Phase Short Circuit
- Drive Overtemperature
- Motor Overtemperature
- Over Current Foldback
- I<sup>2</sup>t Current Limiting
- Feedback Loss

### Weight

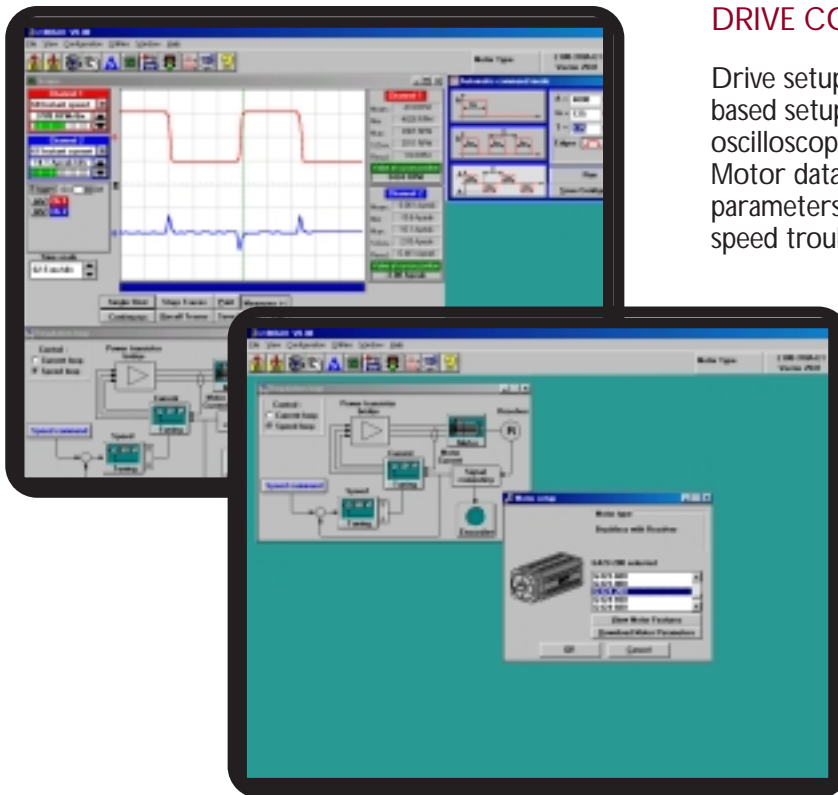
3.2 kg

### Environmental Conditions

- Operating Temperature Range  
0-60°C Ambient (derate 2%/°C above 50)
- Humidity  
5-95% non-condensing
- Altitude  
3300 ft. (derate output 2%/1000 ft. above 3300 ft.)

### Diagnostics

- Seven Segment Display for Warnings/Faults
- GUI Status Windows

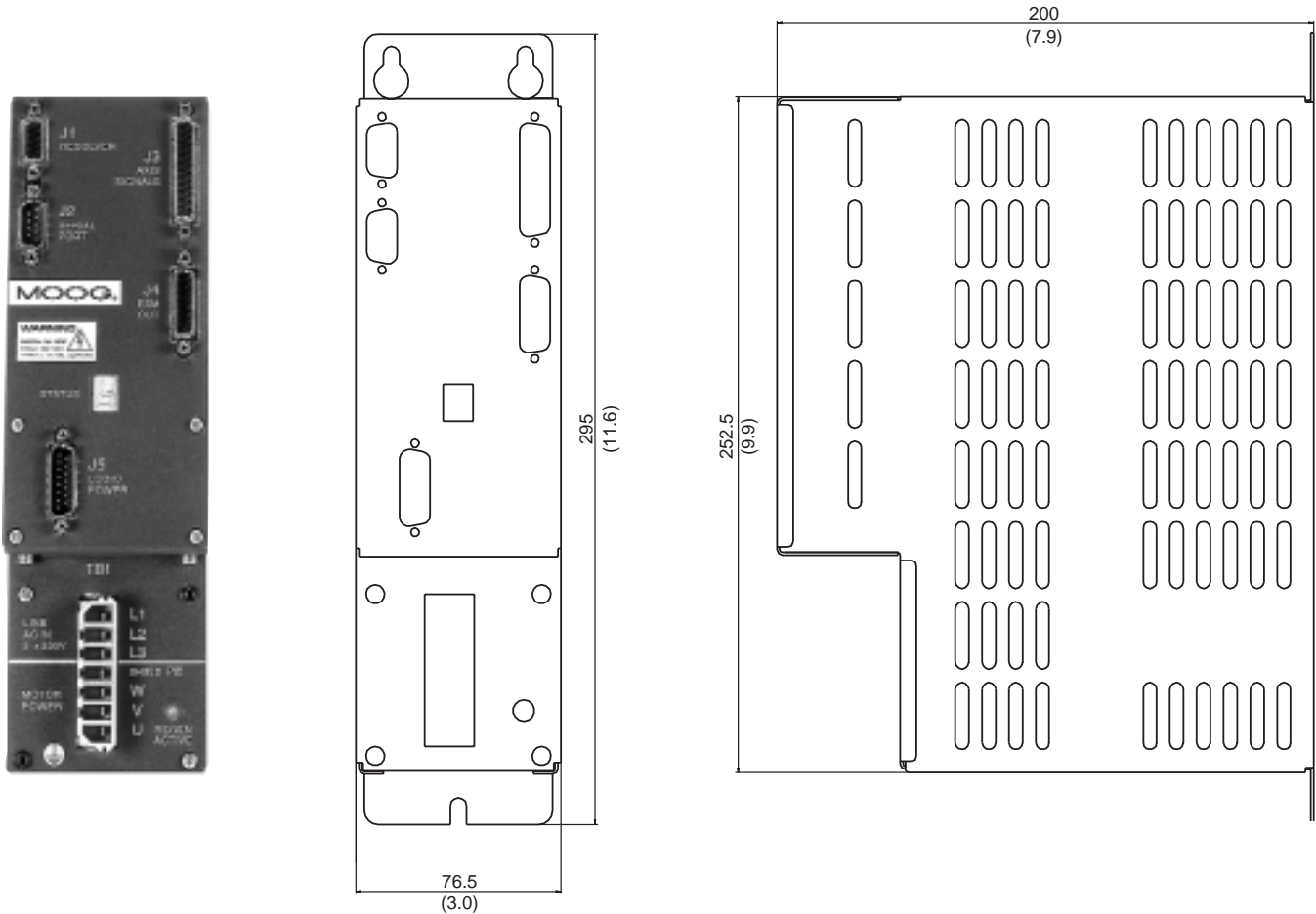


## DRIVE CONFIGURATION

Drive setup via user-friendly Windows® based setup program. Utilities include virtual oscilloscope with data logger to simplify tuning. Motor database to quickly specify motor parameters. Drive status and diagnostics to speed troubleshooting and system diagnostics.

## Digital I/O Functionality

Reference	Nomenclature	Type	Functionality
Input (1)	Drive Enable	Active High	Active signal enables the drive power stage
Input (2)	CW Limit	Active Low	Active signal initiates servo stop and prevents further CW rotation.
Input (3)	CCW Limit	Active Low	Active signal initiates servo stop and prevents further CCW rotation.
Input (4)	Auto/Manual Select	Active Low	Active signal switches drive operating limits from Auto to Manual (alternate current limits used in Torque Mode).
Output (1)	Ready Relay	Relay Contact	Contact is closed when no latched faults are present and drive power stage has been enabled.



Motor			L180 Series Servo Drive					
			L180-310		L180-410		L180-510	
Model Number	Continuous Stall Torque		Current Ratings $I_c/I_p$					
	$T_c$		5 / 10 Arms		10 / 20 Arms		15 / 35 Arms	
	Nm	lb-in	$T_c / T_p$		$T_c / T_p$		$T_c / T_p$	
			Nm	lb-in	Nm	lb-in	Nm	lb-in
G412-2XX	0.25	2.21	0.25/0.60	2.21/5.31	-	-	-	-
G412-4XX	0.50	4.43	0.50/1.40	4.43/12.4	-	-	-	-
G412-6XX	0.95	8.41	0.95/2.60	8.41/23.0	-	-	-	-
G412-8XX	1.70	15.1	1.70/5.00	15.1/44.3	-	-	-	-
G413-2XX	0.60	5.31	0.60/1.50	5.31/13.3	-	-	-	-
G413-4XX	1.65	14.6	1.65/4.50	14.6/39.8	1.65/4.70	14.6/41.6	-	-
G413-6XX	2.55	22.6	2.55/7.20	22.6/63.7	2.55/8.50	22.6/75.2	-	-
G413-8XX	3.70	32.8	3.70/8.80	32.8/77.9	3.70/13.0	32.8/115	-	-
G414-2XX	1.30	11.5	1.30/3.20	11.5/28.3	-	-	-	-
G414-4XX	2.60	23.0	2.60/4.85	23.0/43.0	2.60/6.50	23.0/57.5	-	-
G414-6XX	4.70	41.6	3.60/7.00	32.0/62.0	4.70/12.5	41.6/111	4.70/12.5	41.6/111
G414-8XX	8.20	72.6	-	-	8.20/16.5	72.6/146	8.20/22.0	72.6/195
G414-9XX	11.0	97.4	-	-	11.0/22.5	97.4/199	11.0/31.3	97.4/277
G415-2XX	5.80	51.3	-	-	5.80/10.8	51.3/95.6	5.80/12.2	51.3/108
G415-4XX	11.2	99.1	-	-	-	-	11.2/25.8	99.1/228
G415-6XX	16.6	147	-	-	-	-	16.6/37.0	147/327
G415-8XX	25.0	221	-	-	-	-	17.5/37.5	155/332

1. Torques " $T_c/T_p$ " are specified as "continuous/peak" stall ratings.
2. Controller currents " $I_c/I_p$ " are specified as "continuous/peak" rms amps per phase.
3. Motor peak torques are specified for at least 1 second out of 10 seconds and less than 15% saturation. Contact Moog for higher torque at lower duty cycle.