



Introduction:

DRV- Series DC solid-state reversers offer a retrofit solution for conventional electromechanical reversers. With a solid-state H-bridge construction, internal structure provides a natural discharge path for back-EMF generated at the motor's turn-OFF. This results in a switch that is maintenance-free, arc-free, and noise-free.

DRV- Series are rated up to 1,500VDC, and 200A continuous. While the "standard model" is designed for directional control only, the "advanced model" further allows pulse width modulation up to 5 kHz, enabling speed control, soft start, and soft-stop programs.

Features and Benefits




- Maintenance-free, Arc-free, Noise-free,
- Robustly Built for High Power Loads
- Cutting-edge PWM Models for Advanced Controls
- Available Ratings Up to 1.5kVDC and 200A
- Made in Canada; Semiconductor Parts from the USA

Part# Reference:

Model		Output Voltage		Output Current	Control Input		Other Features			
<i>DRV</i> □		<i>004</i>		-	<i>200A</i>		<i>2</i>			
DRVS	Standard Model (for DC polarity reversing only)	004 =	1-40 VDC	Rated Continuous Current (A)	N/A	3 - 32 VDC (CMOS/TTL)		N/A = None		
		007A =	1-75 VDC			1 =	3.3 - 11 VDC		ST = Soft-start Only	
		01 =	1-100 VDC			2 =	12 - 32 VDC			
DRVA	Advanced PWM Model (for polarity reversing and PWM)	02 =	1-200 VDC			3 =	12 - 24 VDC			SP = Soft-stop Only
		06 =	600 VDC			4 =	4 - 32 VDC			
		1K =	1,000 VDC							
		1K5 =	1,500 VDC			SS = Soft-start & Soft-stop	Other custom References			

Contact Us for Other Options

Contact us for any questions or custom requirements:

 www.nominalcontrols.com |  info@nominalcontrols.com |  +1 (844) 741-2580

	Specifications					
Part No.	DRV□004-200A	DRV□01-200A	DRV□02-150A	DRV□06-120A	DRV□1K-150A	DRV□1K5-60A
Rated Voltage	1 - 40 VDC	1 – 100 VDC	1 – 200 VDC	1 – 600 VDC	1 – 1,000 VDC	1 – 1,500 VDC
Recommended Operating Voltages	(Motors): Up to 24 VDC	(Motors): Up to 36 VDC	(Motors): Up to 60 VDC	(Motors): Up to 180 VDC	(Motors): Up to 230 VDC	(Motors): Up to 360 VDC
	(Resistive Loads): Up to 30 VDC	(Resistive Loads): Up to 80 VDC	(Resistive Loads): Up to 150 VDC	(Resistive Loads): Up to 480 VDC	(Resistive Loads): Up to 750 VDC	(Resistive Loads): Up to 1000 VDC
Rated Load Current¹	200A	200A	150A	120A	150A	60A
Rated Surge Current²	400A	300A	200A	120A	150A	60A
Typical ON Resistance or Voltage Drop	12 mΩ	5 mΩ	15 mΩ	<2.9 V	<3.4 V	45 mΩ
Leakage Current	<1mA					
	Standard Model, Input Specifications			Advanced PWM Model, Input Specifications		
CTRL Power Supply	None			12-32 VDC, ~100mA		
CTRL Input Voltage	12-32 VDC, ~100mA (customizable) FWD = L1+/L2- REV = L1-/L2+			3-32 VDC, ~2mA (TTL/CMOS/Logic compatible) FWD = L1+/L2- REV = L1-/L2+		
Max PWM³	20 Hz			Up to 5kHz		
Must Turn-OFF Voltage	<8 VDC			<1.5 VDC		
Interlock Timer	200ms (default)					
Isolation Voltage	2.5kV (AC 1min 50/60hz)					
LED Indicators	Green(forward), Red(reverse)			Amber(power), Green(forward), Red(reverse)		
	Temperature & Physical Specifications					
Operating & Storage	-40 to 80°C [-40 to 176°F]					
Max Junction & Baseplate Temperature	Junction: 125°C [257°F] Baseplate: 100°C [212°F]					
Thermal Impedance⁴	R _{JC} = 0.1°C/W, R _{CH} =0.05°C/W	R _{JC} = 0.1°C/W, R _{CH} =0.08°C/W	R _{JC} = 0.1°C/W, R _{CH} =0.1°C/W	R _{JC} = 0.29°C/W, R _{CH} =0.08°C/W	R _{JC} = 0.12°C/W, R _{CH} =0.08°C/W	R _{JC} = 0.3°C/W, R _{CH} =0.1°C/W
Input Termination	14-28 AWG (max 0.4 Nm)					
Output Termination	Threaded M5					
Dimensions LxWxH	106x80x50 mm [4.17x3.15x2 in]					
Typical Weight	450 g [1 lb]					

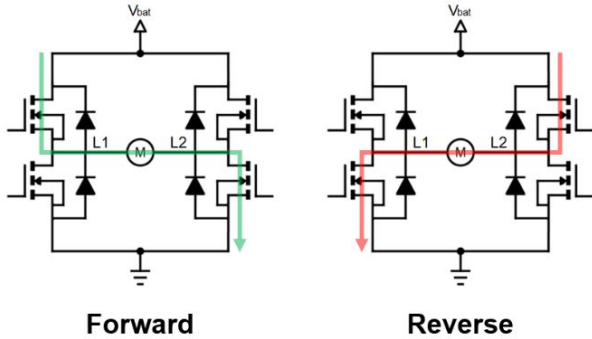
¹ Rated continuous load current assumes baseplate is at a temperature of 100°C..

² Rated assumes baseplate is at 25°C. Surge-current withstanding duration depends on cooling provided, up to a maximum of 5s.

³ Exceeding max PWM may result in duty cycle drift until the unit no longer turning off. For Advanced PWM models, doing so may also generate excessive transient and heating.

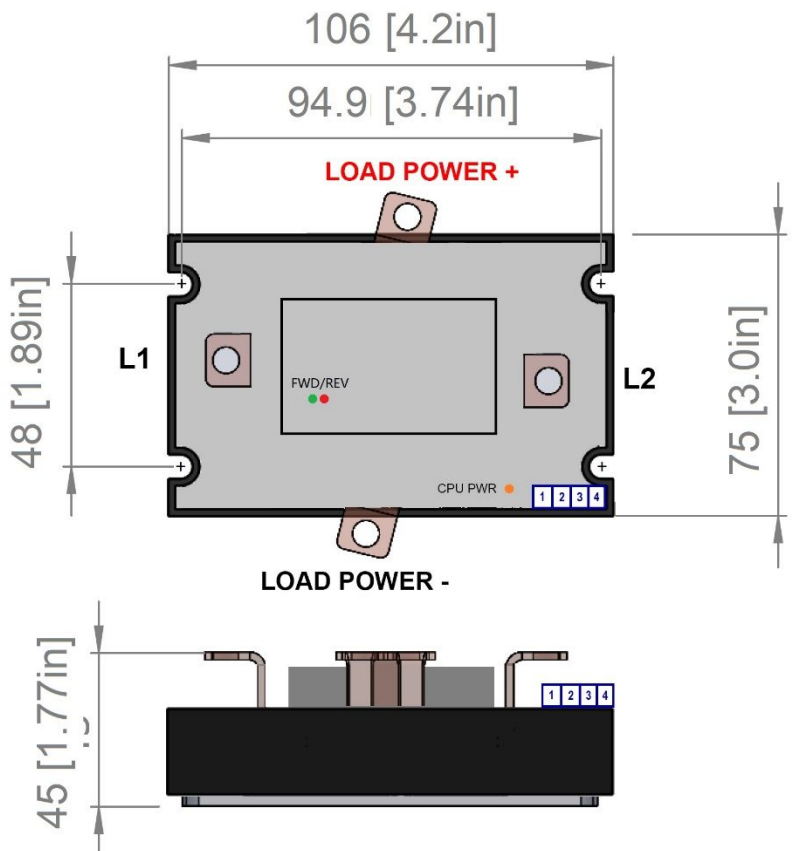
⁴ R_{JC}=Thermal impedance of junction-baseplate, R_{CH} = thermal impedance of baseplate-heatsink. R_{CH} assumes the presence of a thermal interface material layer of 1W/mK, 0.2mm.

Principle of Operation & Selection Guidelines:



- Choose SSR with "rated voltage" at least **2x higher** the operating voltage.
- If the DC motor does not require plugging, choose SSR with "rated current" **moderately higher than** the motor's inrush current.
- If the DC motor requires plugging, choose SSR with "rated peak current" **moderately higher than** the motor's **plugging** current.
- When in doubt, a good rule of thumb is to choose a SSR with "rated current" **5-8x higher** than the motor's nominal operating current.
- Size a heatsink based on highest current that will sustains over 1 second. Typically, this is the stall current.
- Always consider adding a snubber across load terminals. This will help to suppress transients.

Dimensional Drawings:



Standard Model	
Input Terminal	Connection(s)
1	N/A
2	FWD Signal (+)
3	0V/COM or FWD (-), REV (-)
4	REV Signal (+)

Advanced PWM Model	
Input Terminal	Connection(s)
1	0V/COM, or Power (-), FWD (-), REV (-)
2	Power (+), +12-32 VDC, ~100mA
3	FWD Signal, +3-32 VDC
4	REV Signal, +3-32 VDC

Dimensions in mm [in]

Thermal Derating Requirement (Heatsink Rth Upper Limit):

When unsure about operating duty cycle, use continuous current as the basis of sizing cooling

DRV□004-200A (Rated 40VDC, 200A)				
Minimum Heatsink Derating at 40°C T-Ambient				
Operating Current (Δ=Voltage Drop)	Continuous (100% Duty)	1kHz (50% Duty)	3kHz (50% Duty)	5kHz (50% Duty)
50A (Δ0.09V)	19.9°C/W	30.4°C/W	20.5°C/W	15.5°C/W
100A (Δ0.18V)	4.9°C/W	8.5°C/W	6.7°C/W	5.5°C/W
150A (Δ0.27V)	2.1°C/W	3.9°C/W	3.3°C/W	2.8°C/W
200A (Δ0.36V)	1.1°C/W	2.2°C/W	1.9°C/W	1.7°C/W

DRV□01-200A (Rated 100VDC, 200A)				
Minimum Heatsink Derating at 40°C T-Ambient				
Operating Current (Δ=Voltage Drop)	Continuous (100% Duty)	1kHz (50% Duty)	2kHz (50% Duty)	3kHz (50% Duty)
50A (Δ0.1V)	12.91°C/W	15.2°C/W	10.8°C/W	8.3°C/W
100A (Δ0.2V)	1.71°C/W	4.7°C/W	3.7°C/W	3°C/W
150A (Δ0.3V)	0.67°C/W	2.2°C/W	1.8°C/W	1.5°C/W
200A (Δ0.4V)	0.3°C/W	1.2°C/W	1°C/W	0.9°C/W

DRV□02-150A (Rated 200VDC, 150A)				
Minimum Heatsink Derating at 40°C T-Ambient				
Operating Current (Δ=Voltage Drop)	Continuous (100% Duty)	1kHz (50% Duty)	2kHz (50% Duty)	3kHz (50% Duty)
50A (Δ0.4V)	1.96°C/W	4°C/W	3.9°C/W	3.8°C/W
75A (Δ0.6V)	0.66°C/W	1.7°C/W	1.7°C/W	1.6°C/W
100A (Δ0.8V)	0.3°C/W	0.9°C/W	0.9°C/W	0.9°C/W
125A (Δ1V)	0.13°C/W	0.5°C/W	0.5°C/W	0.5°C/W

DRV□06-120A (Rated 600VDC, 120A) Minimum Heatsink Derating at 40°C T-Ambient	
Operating Current (Δ=Voltage Drop)	Continuous (100% Duty)
50A (Δ2.4V)	0.5°C/W
100A (Δ3.0V)	0.1°C/W

DRV□1K-150A (Rated 1,000VDC, 150A) Minimum Heatsink Derating at 40°C T-Ambient	
Operating Current (Δ=Voltage Drop)	Continuous (100% Duty)
50A (Δ2.6V)	0.5°C/W
100A (Δ3.4V)	0.1°C/W

DRV□1K5-60A (Rated 1,500VDC, 60A) Minimum Heatsink Derating at 40°C T-Ambient	
Operating Current (Δ=Voltage Drop)	Continuous (100% Duty)
25A (Δ2.5V)	1.5°C/W
50A (Δ3.0V)	0.2°C/W