

High Power DC Solid State Relay (HPD-)



Introduction

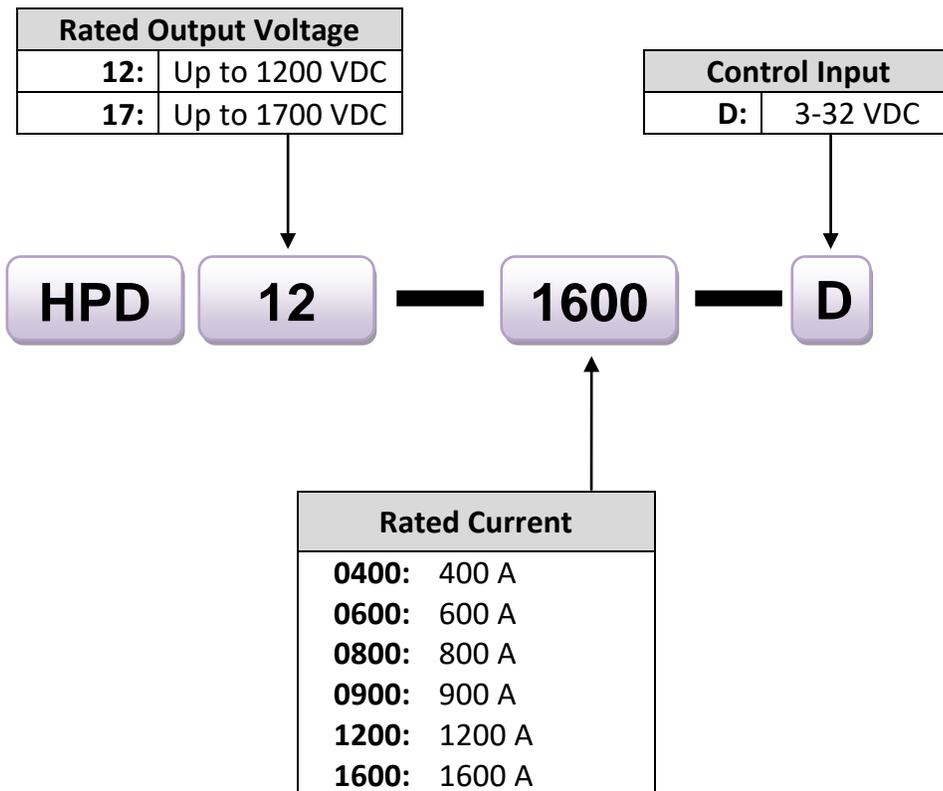
High Power DC solid state relays (**HPD-**) offer one-of-a-kind reliability for even the most demanding applications. HPD- relays incorporate strict supervisory circuit to ensure proper driving conditions and to prevent input-induced failures. They are also free of control and thermal problems common among other high power DC solid state relays on the international market. HPD seeks to offer users a peace of mind unlike any other on the market.

Features

- high current, high voltage, high reliability
- maximum performance
- integrated design
- supervisory circuit prevents input-induced failures
- made in Canada

<u>Performance Specifications</u>	
Control Input Voltage (on):	3 to 32 VDC (isolated)
Turn-off Voltage (full off):	<2.9 VDC
Minimum Control Input Current:	1mA
Power Supply:	12 VDC/100mA
Rated Current:	400A/600A/800A/900A/1200A/1600A @ 70°C
Rated Output Voltage:	1200 VDC/1700 VDC
Max Permitted Continuous Load Current:	Resistive Loads (50% to 70% of rated current) Inductive Loads (20% to 30% of rated current) Capacitive Loads (10% of rated current)
Voltage Drop:	2.1VDC typical/3.0VDC maximum at 600amps
Switching Speed:	<2 ms
Max Surge Current (1ms):	2x the rated current
Insulation:	2000V
Warranty:	1 year
Component Certifications:	RoHS, UL
<u>Temperature and Physical Specifications</u>	
Operating Temperature:	-40 to 125°C
Storage Temperature:	5 to 40 °C
Overall Dimensions:	109x62x37mm or 130x140x37mm (LxWxH)
Net Weight:	450g - 1200g

Ordering Guide:



USAGE PRECAUTIONS:



Selection:

Our High Power DC solid state relays are designed for maximum reliability. Moderate degrees of tolerances and safety protocols have been incorporated into their design. However, due to improper selection or misuse, irreversible damages to the relay's internal components may still occur. While selecting a SSR, parameters such as inductive reactance, capacitance, inrush current, power grid variables ($\pm 10\%$), and other tolerances must be taken into account. A lower SSR current rating may be permitted if the load's start-up current follows a lower and gradual increasing inrush current such as motor soft-start. As a rule of thumb, choose SSR rated 50% of the peak inrush current.

You can choose to double DC-DC SSR's overall rated current by connecting 2 relays in parallel. Each DC-DC SSR still needs to be rated high enough to individually handle the inrush current.

Static Electricity:

High Power DC Solid State Relays (HPD's) are very electrostatic-sensitive, they can be damaged by static electricity. To reduce the possibility of damage by electrostatic discharge:

- Handle the relay module with care at all times. Use antistatic gloves, or hold it by its edge/frame. Do not touch solder joints, pins or exposed printed circuitry.
- Discharge your static electricity and limit your physical movement to minimize static build up before handling the unit.
- Do not leave the device where others may mishandle and possibly damage the device.
- Before removing the unit from its package, touch the antistatic package to an unpainted safe metal surface for at least 2 seconds.
- Remove the unit from the package and install it directly to your system without placing it down. If you must place down the relay module, place it back into its antistatic packaging.
- Handle the relay module with increased care during cold weather. Indoor humidity decreases which will cause an increase in static electricity.

Grounding:

HPD-Relay module must be properly grounded and grounding should be checked carefully.

On/Off Cycle Recovery Time:

A sufficient dead time or recovery time is required between on/off cycles to ensure the relay module does not accidentally cross conduct. A dead time of longer than 3 microseconds is typically recommended.

Over-Current, Over-Voltage Protection:

Most solid state relay damages are the result of over-current, over-voltage, and shorted output. For overcurrent protection, you may use a quick fuse or air circuit breaker. For small capacity SSR you can use ceramic fuses. For overvoltage protection, add a RC snubber circuit. You may also add Metal Oxide Varistor(MOV) in parallel. MOV's surface area will determine the power absorption and its thickness will determined the magnitude of voltage protection. Usually 220V output applications would require 430V to 600V Varistors; 380V output applications would require 750V to 900V Varistors.

HPD relays are protected against improper control voltages. It automatically cuts off control signal completely upon sensing below minimum control input voltage, and automatically resumes control when control voltage is above its specified minimum turn-on value.

Heatsink:

When the nominal working current of your application exceeds 5 amperes, you must attach a compatible heatsink for the relay module and ensure that the base temperature of the relay/module does not exceed 70°C. As a result of thumb the heat sink should weigh 15g per ampere of the nominal current. If relay's operating environment causes concern for overheating even with a heatsink, use cooling fans or other sufficient cooling methods. When in doubt, simply contact us for a suitable heatsink.

In order to maximize relay heat dissipation through heatsink, ensure that heat pad or heat gel is applied between the relay base and heatsink. Tighten all relay screws to ensure a very close contact between the base of relay and the surface of heatsink.

Storage/Handling:

- The long term storage condition of HPD- relay module should be at an ambient temperature of 0 to 40°C with humidity of 45 – 75%.
- The storage environment should be dry and non-corrosive.
- Store in an antistatic containers to prevent electrostatic discharge from damaging the module.
- Avoid contact with water or exposure to moisture.
- Do not drop the relay module or subject it to hard impact.
- Do not subject the relay module to excess vibrations.

Please ensure proper working knowledge, safety precautions, and handle all electrical components with care to avoid risks of electrical shock!



Do not touch SSR terminals when power supply is ON or immediately after power supply is switched off.



Conduct wiring only when the power supply is OFF. Make sure available terminal covers are attached before use.



SSR and heatsink may likely be hot and cause burns. Do not touch them until power is off and surfaces are cooled.