

SOLID STATE RELAYS IN ENVIRONMENTAL TEST EQUIPMENT

Background

Environmental test chambers are widely used to test the performance of products, materials, components and equipment under specific environmental conditions to ensure that they will be able to withstand such conditions once they are used on their specific fields of application.

This involves controlling different ambient parameters within the chamber such as temperature, humidity, vibration, and acceleration among others. Depending on the type of application, (commercial, industrial, aerospace, military) the tests might have to be determined by specific standards, such as IEC 60068 and MIL-STD-810, for example.

Solid state relays are ideal for start/stop applications, offering a better performance than EMR solutions.

Environmental chambers can vary from small chambers, the size of a cooking oven, to walk-in chambers, the size of a small room.

Solution

Environmental chambers need to provide precise control of the ambient temperature inside the chamber by heating and/or cooling as required. This can be achieved in several ways, one of which is the use of resistive heating elements. Another common heating method is by using infrared lamps.




Sensata | Crydom solid state relays are perfect for heating control due to their fast response time and extended life expectancy, which allows them to be used in applications where a precise control of the temperature is required. For cooling and for controlling the humidity, some larger and more expensive types of chambers use a fully integrated refrigeration system, but most commonly these chambers use fans/blowers and an array of solenoid valves, which can be switched with our large variety of AC and DC output SSRs. Our solid state relays are ideal for start/stop applications, offering a better performance than EMR solutions.

Some newer types of small chambers make use of Peltier Effect devices to provide thermoelectric heating and cooling. Depending on the polarity of the voltage applied to these devices, they can either cool or heat a surface. Sensata | Crydom DC reversing contactors, which include an "H Bridge" configuration, are an excellent option for driving this type of circuit.



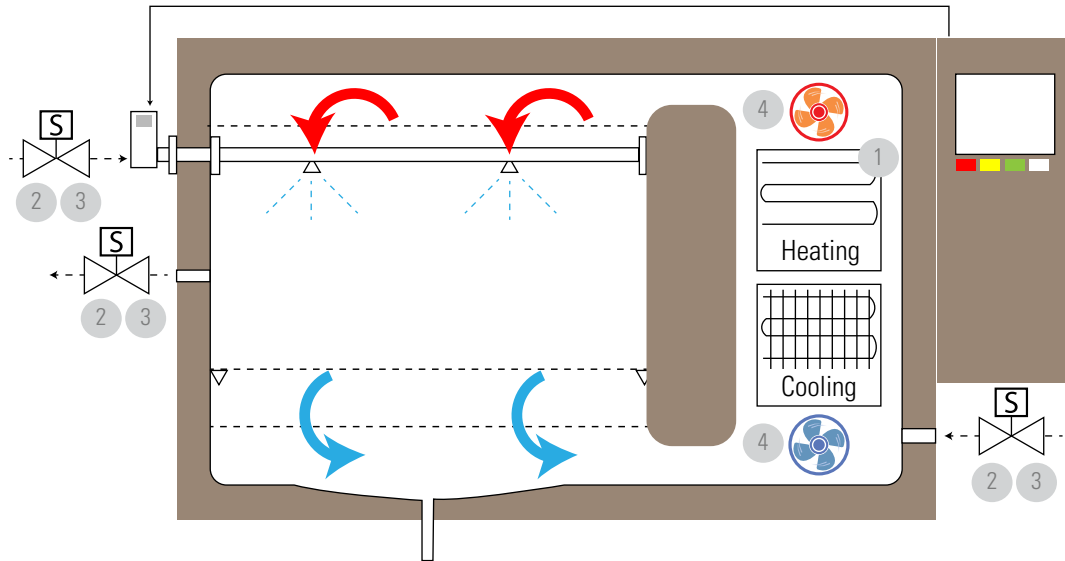


RECOMMENDED PRODUCTS

Reference on Diagram	Product	Features	Function	Brand
1	 DR22 Series	<ul style="list-style-type: none"> DIN Rail mount single phase solid state relay 20 to 35 Amp ratings Relay or contactor configuration 	Heating Control	Crydom
2	 SeriesOne DR	<ul style="list-style-type: none"> Compact DIN Rail mount solid state relay (11 or 18mm) AC or DC output 3 to 24 Amp ratings 	Solenoid Valves On/Off Control	Crydom
3	 ED Series	<ul style="list-style-type: none"> Solid state relay in industry standard plug-in package AC or DC output Ratings from 3 to 10 Amps 	Solenoid Valves On/Off Control	Crydom
4	 DRC3P Series	<ul style="list-style-type: none"> 3-Phase solid state contactor Ratings of 4.8 & 7.6 Amps per phase Available with auxiliary contacts 	Fan On/Off Control	Crydom



ENVIRONMENTAL TEST CHAMBER



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