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ITECH

IT-M3900 Connector Temperature Rise Test Solution

Introduction: A connector is a type of connector that connects electrical terminals to form a circuit. The connector can realize the connection between wires, cables, printed circuit boards and electronic components. It is widely used, and its performance will also affect the overall reliability of the circuit.

The basic performance of connectors can be divided into three categories: mechanical performance, electrical performance and environmental performance. The temperature rise test is one of the tests required by the safety standard of the connector. The temperature rise of the connector refers to the current thermal effect generated after the current conduction. With the passage of time, the temperature of the conductor surface continues to rise until it is stable. The temperature rise test is to test the durability of the connector at the highest allowable temperature.

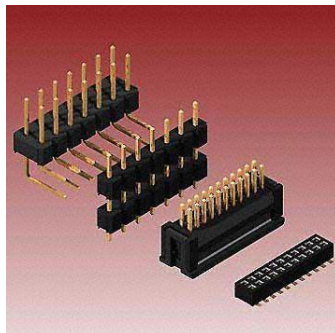
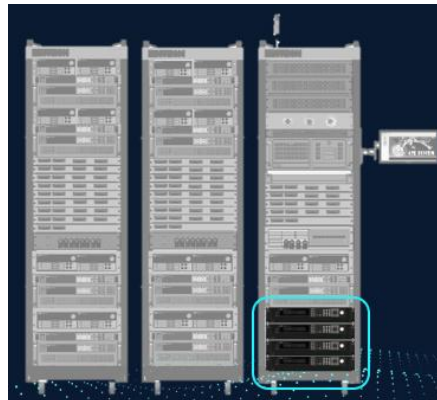


Figure 1 schematic diagram of connector

A connector customer of ITECH needs to complete the 7.9b electrical load and temperature test in "GB/T5095.5-1997 Electromechanical components for electronic equipment. Basic testing procedures and measuring methods. Part 5: Impact tests (free components), static load tests (fixed components), and endurance tests and overload tests". During the test, the current shall be passed through the test sample, and the current shall be increased slowly until it is close to the specified maximum working temperature, and the current at this temperature shall be maintained until

the end of the test. The test duration is preferably 250h, 500h, 1000h, and 2000h. After the first 10h and the end of the test, the insulation resistance is measured at high temperature and after cooling according to the test regulations, and it should not be less than the value specified in the specification. Although the temperature rise test is a routine test, users always hope to find a test instrument with higher power density, more energy saving, more stable and reliable, and flexible and easy-to-use in a limited test environment.



ITECH's new IT-M3900D series high power DC power supply provides a new generation of testing experience for connectors. At present, the current of high-current connectors is generally above 500A, and the voltage requirements for testing are relatively small, which are basically controlled within 5V. The traditional switching power supply can reach this current level, the basic power is 10kW or even 20kW, and the volume and weight are very large. Using IT-M3900 series high power DC power supply can reach 510A in 1U and 1040A in 2U, which can not only meet the demands of test current, but also save space for customers with ultra-high power density.

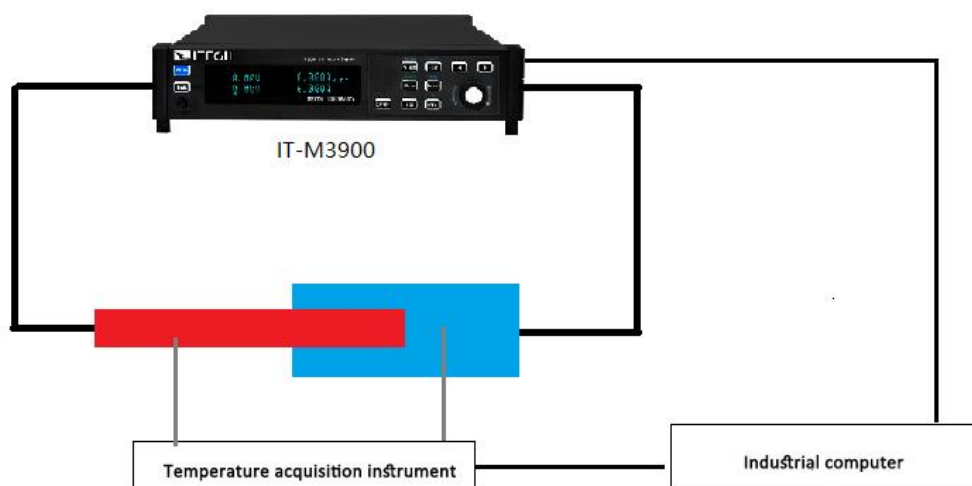


FIG. 2 Schematic diagram of connector test

The principle of temperature rise test is shown in Figure 2. IT-M3900 is used to connect the connector of the DUT, and the temperature acquisition instrument is

used to test the temperature point of the connector to be measured, and the power supply and the data uploaded by the temperature acquisition instrument are synchronously processed and controlled through the industrial computer. In terms of product functions, IT-M3900 series high power DC power supply has CC/CV priority adjustable function, which adapts to constant current control requirements. In addition to the general features (such as List function, comprehensive protection function), it also supports digital I/O function, data recording function, etc.

ITECH also provides users with more professional software and test system products. Connector users can use the ITS9500 test system to complete automated tests, and can set different working modes for temperature rise tests: 1. Continuous/intermittent test, in which the duration of intermittent test can be set; 2. Constant current mode (record the temperature change of each test point according to the set rated current); 3. Constant temperature mode (automatically adjust the input current according to the set experimental temperature). The test system can control up to 200 channels at the same time, and also has customized reports forms and flexible data analysis functions.

IT-M3900 family includes IT-M3900B Regenerative Power System, IT-M3900C Bidirectional Programmable DC Power Supply, IT-M3900D High Power Programmable DC Power Supply and IT-M3800 Regenerative DC Electronic Load. IT-M3900 series voltage from 10V to 1500V, 1U/6kW, 2U/12 kW meet high current, low voltage or high voltage, low current and other test requirements. At the same time, the unit of the same model can work in parallel to achieve stronger output capacity. IT-M3900C-SAS series is also equipped with professional software SAS1000 to support photovoltaic simulation and BSS2000 battery simulation functions.

ITECH is a professional manufacturer of power electronics testing instruments and systems. Know more about products and testing solutions, please visit ITECH website <https://www.itechate.com/>.

