

Figure 3: Rated output current test.

The power supply is provided with steps of 500 A to 500 A, and the output current of the power supply is collected by using the oscilloscope TektronicMDO3054. The current rise time is 40000 A/s, as shown in Fig. 4.

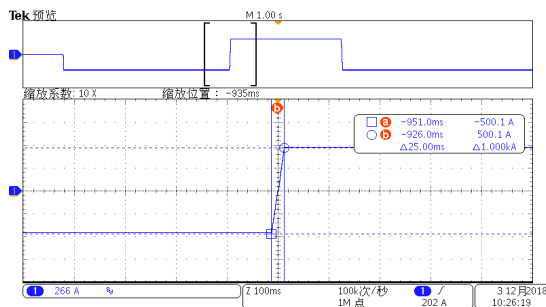


Figure 4: Change rate of current.

The power supply is given 0 A to 96A step 16A a step and the power output current collection is performed using the oscilloscope TektronicMDO3054, as shown in Fig. 5.

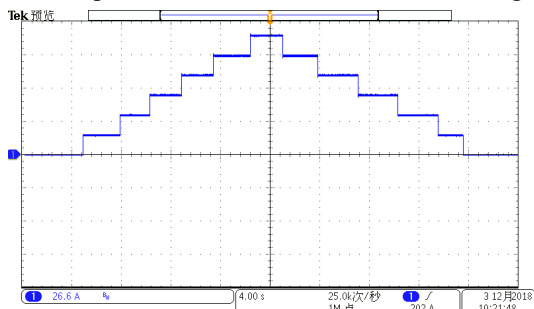


Figure 5: Stepping of output current.

The digital multimeter uses 20 mS as sampling period, 10 NPLC, high accuracy mode and 10 moving average. The upper computer records the data once a second. Full working current point was selected for testing, and the test time was 8 hours, as shown in Fig. 6.

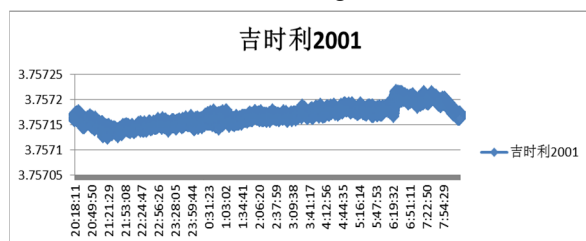


Figure 6: Long-term Stability test.

The Long-term Stability is calculated by the following formula.

$$S = \frac{I_{\max} - I_{\min}}{I_{\text{avg}}} = \frac{3.757219 - 3.757123}{3.757168} = 25.5 \text{ ppm}$$

The test result of long-term stability is 25.5 ppm, comply with the design requirement.

CONCLUSION

This paper introduces the basic parameters and some test data of scanning magnet power supply of HUST-PTF. We will debug the control system of the scanning power supply and adjust it with the scanning magnet to see if it meets the design requirements, so as to prepare for the further promotion of the HUST-PTF project.

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