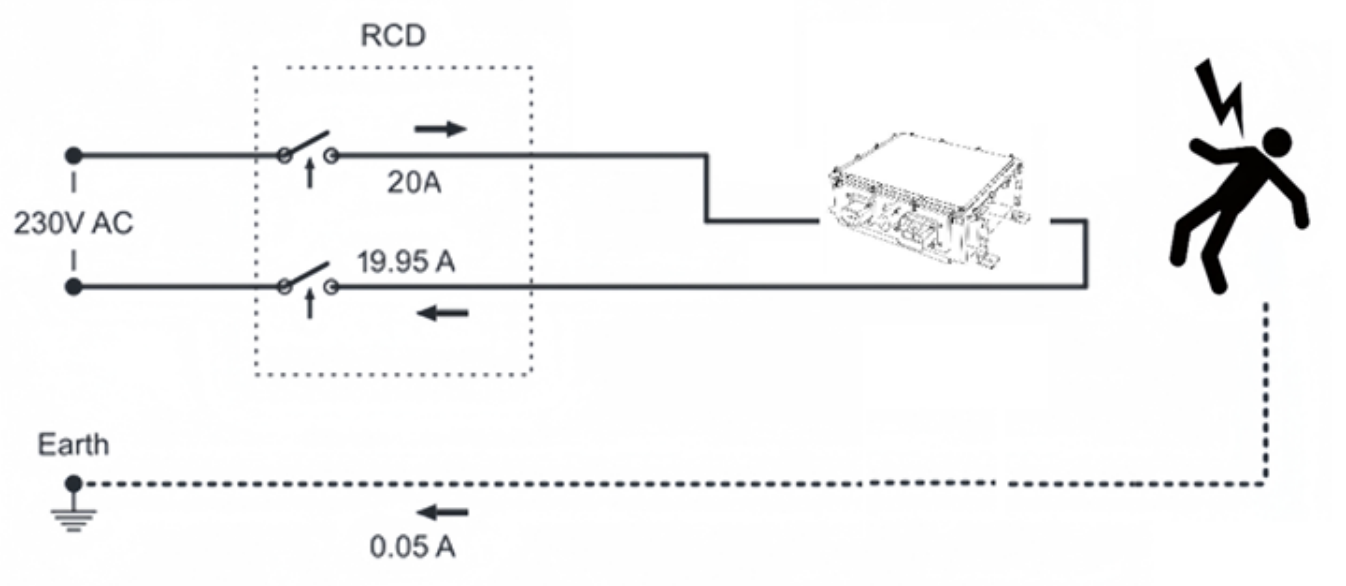
ZGX15: Ideal for OBC Testing with Low Leakage Current

In the design and operation of electric vehicle charging piles, the management and protection of leakage current are crucial. Leakage current refers to the current that should not exist under normal working conditions, which may flow through the insulation layer of the equipment to the ground or other unintended paths. The presence of this current not only poses a threat to personal safety but can also cause damage to the equipment. Therefore, ensuring that charging piles have effective leakage current detection and protection mechanisms is key to ensuring their safe operation.

To achieve this goal, charging piles typically use a Residual Current Device (RCD) for leakage current protection. The RCD is a safety device that can detect electrical faults and quickly disconnect the circuit. It compares the phase current in the circuit with the current returning through the neutral line; if the deviation between the two current values exceeds the limits, the RCD will automatically trip, cutting off the power supply to prevent potential safety accidents.



The leakage current protection requirements for electric vehicle charging piles are strict, with corresponding safety standards for different charging modes. These standards include IEC60364-7-722, UL2231, GB/T 18487.1-2023, and IEC62752, all of which stipulate that the leakage current of the RCD circuit should be less than 30mA, or even lower.

When testing charging piles, the use of a grid simulation power source is essential. Since the output end of the power source is usually equipped with filter circuit, the capacitors within may generate leakage current. Although this non-energy current is not dangerous, it can cause the protective device such as the RCD to act incorrectly, leading to unnecessary tripping.

The BriPower ZGX15 power source is particularly suitable for testing charging piles, especially On-Board Chargers (OBC), due to its low output-side capacitance and minimal leakage current.

To verify this, we conducted a detailed leakage current test on the ZGX15 model.

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In the no-load test, we connected the input terminals A/B/C of the ZGX 15 to the grid and connected a current meter in series with the grounding wire. With a three-phase set voltage of 220VL-N output, the test result showed a leakage current of only 9.2mA at the grounding end.

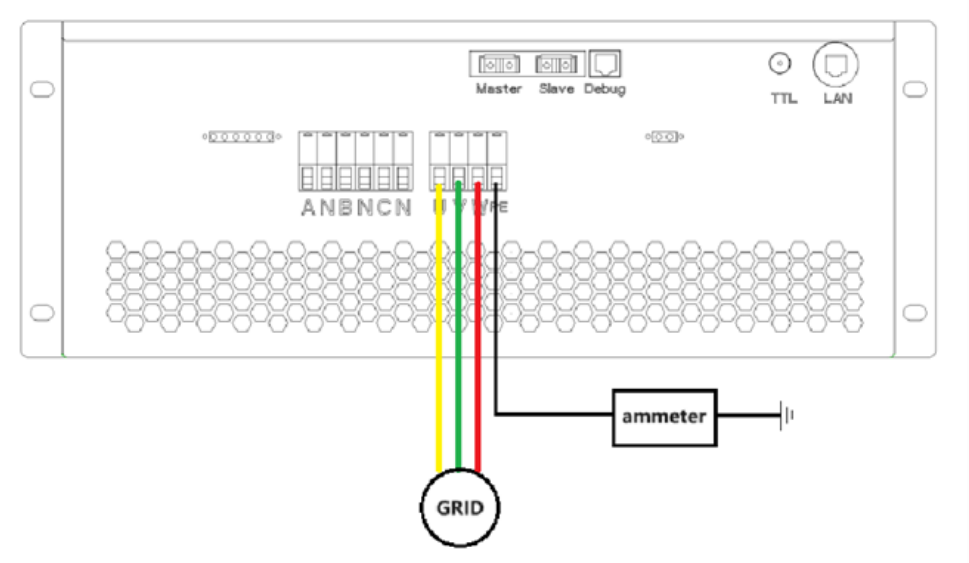

Figure 2 Schematic diagram of a no-load test connection

In the load test, we similarly connected the input terminals A/B/C of the ZGX 15 to the power grid and connected a current meter in series with the grounding wire. At the output, each phase connected to a 10Ω resistor, with a three-phase set voltage of 220VL-N output. The test result indicated a leakage current of 8.9mA at the grounding end during load output.

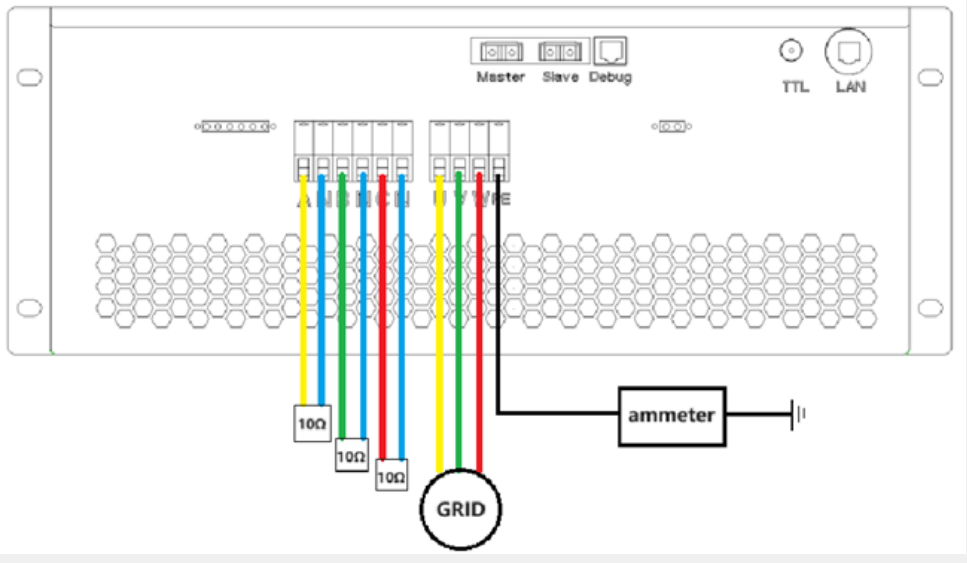

Figure 3 Schematic diagram of the on-load test connection

In summary, whether under no-load or load conditions, the leakage current of ZGX 15 is less than 10mA. This test result proves that ZGX 15 will not falsely trigger the RCD in practical applications.