

## Current Measurement Method for Electric Wires with Shielding

Accurate Measurement by Canceling the Leakage Current of Shielded Wires in Applications Such as xEVs

### ■ Issues in Measuring Shielded Wires

High voltage electric wires are used between batteries, inverters and motors in HEVs, PHEVs, and EVs. In particular, since there is parasitic capacitance between the inverter, motor, electric wire, and ground, high-frequency leakage current may flow due to the harmonic components contained in the inverter's output voltage waveform. Although there is a demand to measure the current of shielded wires, creative measures are necessary to measure it accurately. You can cancel the leakage current flowing through the shielded wire and measure the true current flowing through the inner conductor by the following method outlined in this user's guide.

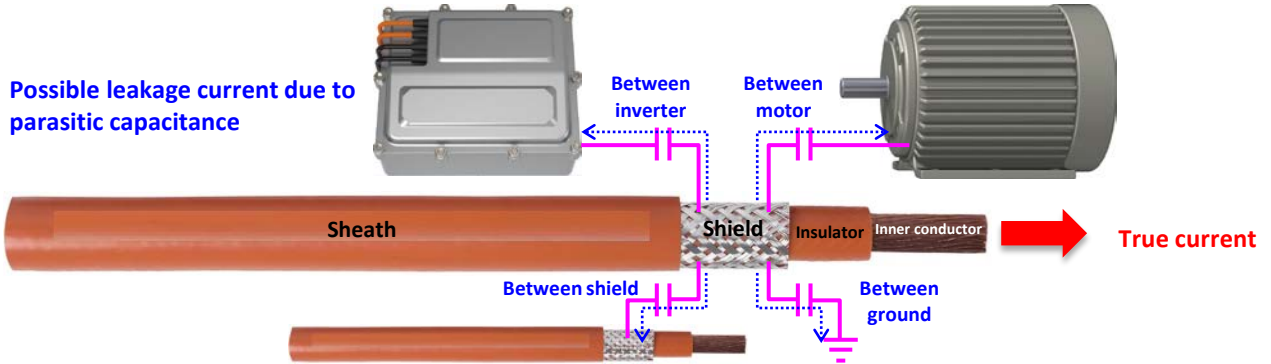


Figure 1. Factors of Leakage Current Generated in High-voltage Shielded Wires in xEVs

### ➤ When measuring the current as is

⇒ **True current** and **leakage current** cannot be separated!

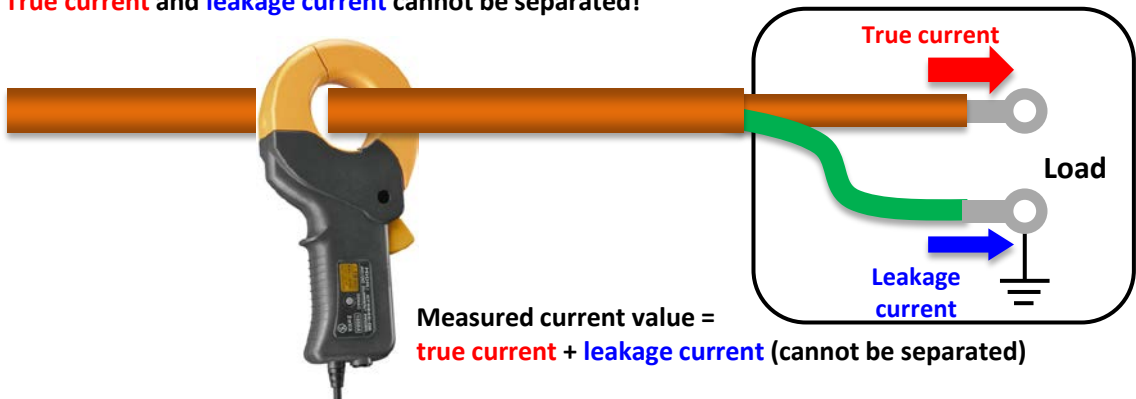


Figure 2. When Measuring the Current of a Wire with a Shielded Wire as is

### ➤ When measuring the shielded wiring with the shielding wire folded back and strung through the current clamp

⇒ **True current** and **leakage current** are separated!

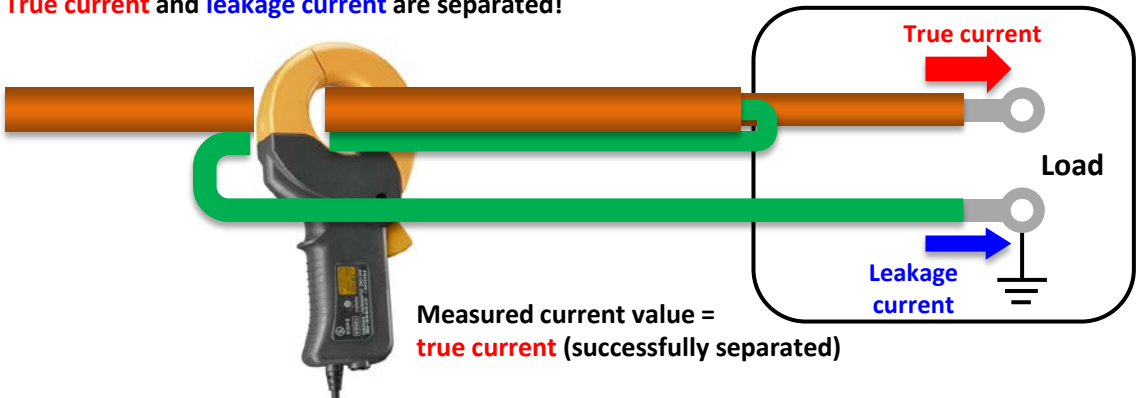


Figure 3. When Canceling Out the Influence of Leakage Current of the Shielded Wire