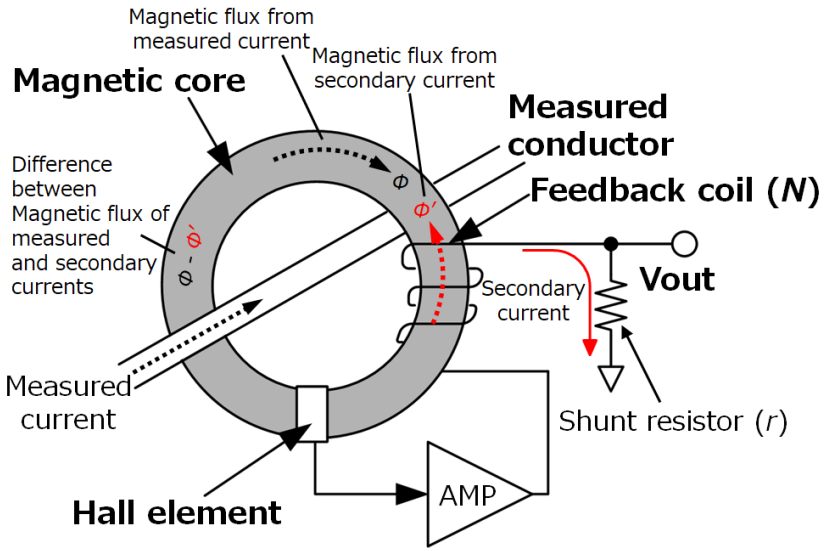
Details of Current Sensors by Operating Principle
⑤ Zero Flux Method (Hall Element Detection) (AC/DC)

Characteristics

- Operates by canceling out the magnetic flux in the magnetic core, giving it excellent linearity unaffected by the magnetic core's *B-H* magnetic characteristics.
- Since the probes operate using the CT of the secondary feedback winding in the high-frequency region, and utilize an amplifier for the low-frequency region, a broad frequency bandwidth is supported with a high *S/N*.
- Measure DC to AC
- Due to lack of excitation current noise, overall noise is extremely low.



Measurement Principle

- In the zero-flux method, in order to cancel out the magnetic flux (Φ) produced inside the magnetic core by the AC current flowing in the conductor being measured, a secondary current flows to the secondary side of the feedback winding inducing a secondary magnetic flux (Φ').
- However, in the low-frequency regions resulting from DC currents, the magnetic flux (Φ-Φ') cannot be cancelled and thus remains in the circuit.
- The Hall element detects this remaining magnetic flux (Φ-Φ'). Then, a secondary feedback current is induced through an amplifier circuit so as to cancel out the magnetic flux (Φ-Φ') in the low Hz regions.
- This secondary current flows to the shunt resistor, producing a voltage across its terminals.
- The voltage is identified as proportional to the current flowing in the conductor being measured, giving us the true current level.

Hioki Zero Flux Method Hall Element Detection (AC/DC) Sensors

3273-50, 3274, 3275, 3276, CT6700, CT6701, CT6710, CT6711