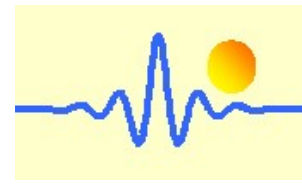
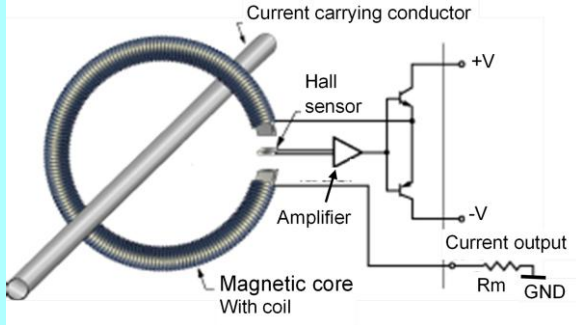


Split Core Closed Loop Hall Effect Current Sensors and Applications



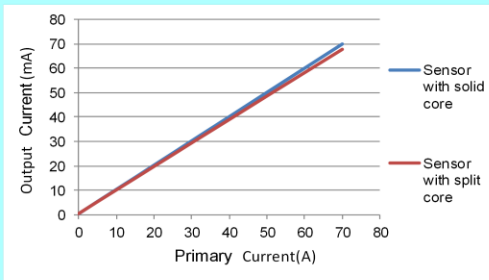
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Technologies
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1. Traditional Closed Loop Current Sensor

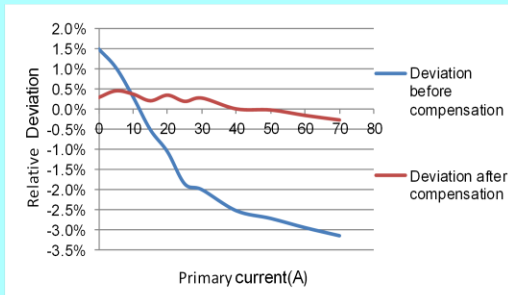


- The closed loop sensor has the advantages of wide frequency range, good overall accuracy, fast response time, low temperature drift, excellent linearity and no insertion losses.
- The disadvantage is not easy to install.

2. Performance of Current Sensor with Split Core

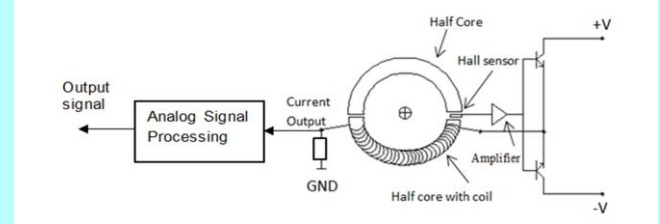


- Under using same sensor circuit, the output current of closed loop current sensor with split core is smaller than that of sensor using solid core.



- The deviation of current sensor with split core after compensation can be limited within the range of $\pm 0.5\%$.

3. Configuration of Split Core Closed Loop Sensor

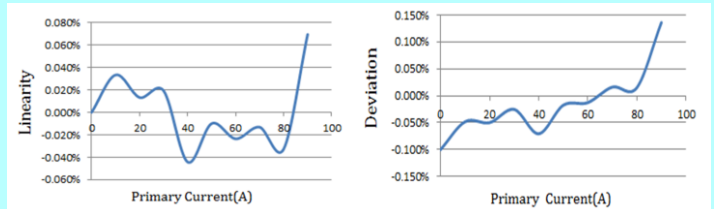


Relevant parameters:

- Dimension of partial split cores
- The turns and position of secondary coil
- The air gap of sensor core
- Relative section of soft magnetic core
- Position of Hall elements

4. Experiment Results

In the experiment, a coil with 1000 turns is wound around soft magnetic half core. The rated input current of split core closed loop current sensor is 40A corresponding to rated output 5V.



- The linearity of the split core current sensor under test is within $\pm 0.08\%$.
- The relative deviation of the sensor is less than $\pm 0.2\%$.

5. Applications



- Widely used in inverters, rectifiers, AC/DC motor drives, power supplies, battery supplied applications, solar panels and photovoltaic equipment.
- The developed sensor can be used in operating power systems without remounting the current conductors.