

## The difference between high frequency transformers and low frequency transformers

The main compressors produced by FKS are FKS-LLCR Resonant Converter ( FKS760895431 , FKS760895631 , FKS760895731 ), FKS-CST Current Sense Transformer ( FKS749252020, FKS749251020, FKS7492540020 ), FKS-OLEFD Offline transformer ( FKS750811612, FKS750811611, FKS750811512 ).

The main difference between high frequency transformers and low frequency transformers is their design and application frequency. Here are some key points of difference:

### 1. Application frequency

High-frequency transformers: Designed to handle higher frequencies of alternating current, typically in the range of several thousand Hertz to several hundred megahertz.

Low-frequency transformers: Designed to handle AC at lower frequencies, typically 50 or 60 Hertz, which is the standard grid frequency in most countries.



### 2. Core materials

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### 3. Design considerations

High frequency transformers: Skin effects and proximity effects need to be considered, as these effects are more significant at high frequencies and may affect the performance of the transformer.

Low frequency transformer: The design mainly considers the hysteresis loss and eddy current loss, as well as the magnetic flux density and magnetic circuit design.

### 4. Winding structure

High-frequency transformers: The windings may be wound in multiple layers to reduce leakage and increase efficiency.

Low frequency transformer: winding design may be simpler, single or multi-layer winding, the main consideration is heat dissipation and mechanical strength

### 5. Insulation requirements

High-frequency transformers: Due to the higher dielectric stress at high frequencies, better insulation materials and structures may be required.

Low-frequency transformers: The insulation requirements are relatively low, but still need to meet electrical safety standards.

#### 6. Heat dissipation

High frequency transformers: Due to the higher loss caused by high frequency, more efficient cooling solutions may be required, such as the use of heat sinks or fans.

Low-frequency transformer: the heat dissipation requirements are relatively low, but the thermal stability under long-term operation still needs to be considered.

#### 7. Application field

High-frequency transformers: often used in switching power supplies, RF amplifiers, communication equipment and other high-frequency electronic equipment.

Low-frequency transformer: widely used in power system, industrial control, household appliances and other low-frequency electrical equipment.

#### 8. Size and weight

High-frequency transformers: Potentially smaller and lighter because high-frequency operation reduces the amount of magnetic material required.

Low frequency transformers: May be larger and heavier because more magnetic material is needed to handle the flux at lower frequencies.

#### 9. Efficiency and performance

High-frequency transformers: High efficiency in design, but may have higher costs.

Low frequency transformers: Efficiency may be lower, but cost and reliability are often design considerations.

#### conclusion

Each type of transformer has its specific design requirements and application scenarios, and the selection needs to be determined according to the specific electrical requirements and environmental conditions.