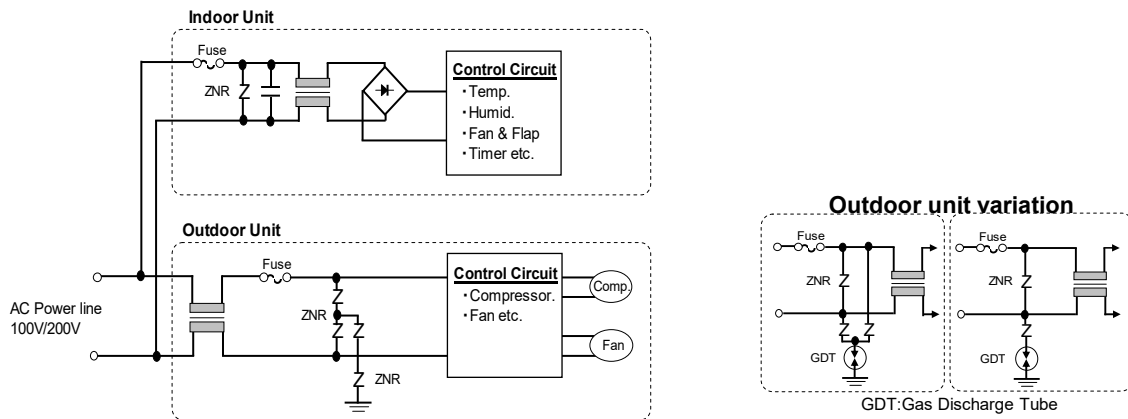


1. Industry segments

- **Field of industry**
 Electric Home appliance(White goods)
- **Product**
 Air Conditioner
 Indoor Unit
 Outdoor Unit



2. Transient surge voltage and its protection by using ZNR



1) Aim of ZNR application

Protection of control circuits for indoor and outdoor units against lightning surges

2) Problems with surge voltage

- **Kind of surge voltage** Induced lightning surge voltage
- **Path for surge voltage** AC power line
- **Failed parts or circuits** Breakdown of power circuits & control circuits or malfunction

3) How to apply ZNR to the circuits

- **Connection**
 Indoor : AC power line(line-line) Outdoor : AC power line(line-line, line-ground)
- **ZNR part number selection**
 For AC100V/200V : Indoor (line-line) ERZE08A471, ERZV10V471, ERZE11A471, ERZV14D471
 Outdoor(line-line) ERZE08A221, ERZV10D221, ERZE11A221, ERZV14D221
 Outdoor(line-ground) ERZV10D102, ERZE11A102, ERZV14D102
 2pcs of the same type in series to obtain 440V and 2kV of V1mA respectively.
 For AC200V outdoor unit variation: Line-line, line-ground(GDT in series) ERZE11A621 or 681
 ERZV14D621 or 681, GDT spark over voltage in DC = 3.6kV
- **Precaution in surge protection designing**
 ZNR should be connected at load side of the fuse(over current protector) with a suitable current rating.
 Model(V1mA) of ZNR or GDT should be selected to clear the voltage at insulation test and withstand voltage test for the air conditioner as well as max. AC line voltage.

3. Relevant technical information or references

JISC60664, IEC60664 『Insulation coordination for equipment within low-voltage systems-Part 1:Principles, requirements and tests』