

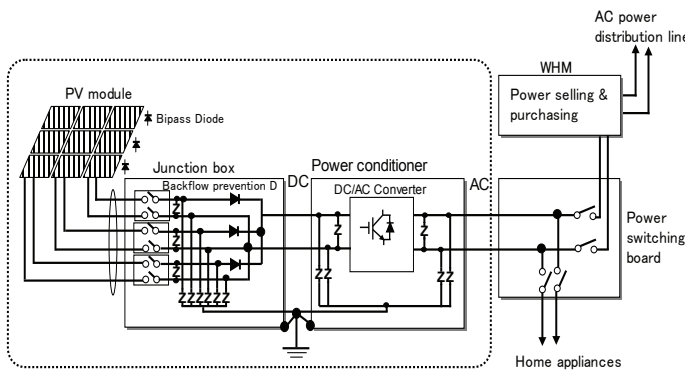
ZNR Application Note

Photovoltaics (PV, Solar Power) Generator

1. Industry Segments:

Field of Industry: Photovoltaics Generator
Product: Power conditioner (DC/AC inverter), Junction Box with backflow prevention diodes

2. Transient Surge Voltage and its Protection by Using ZNR:



Aim of ZNR Application:

Protection of PV system/power conditioner against lightning surge voltages.

Problems with Surge Voltage:

Kind of surge voltage: Lightning surge voltage
Path of surge voltage: PV panels and PV-DC lines to a junction box and a power conditioner
Failed parts or circuits: Breakdown of backflow prevention diodes or DC/AC converter in a power conditioner

How to Apply ZNR to Circuit: (Blue Part Numbers Indicate NEW "E-Series")

Connection: PV DC power line(line-line and line-ground) AC power line(line-line and line-ground)

ZNR part number selection (representative):

ERZE11A or ERZE14A 201-112 Varistor voltage be selected by max.AC line voltage
 ERZV14D or ERZV20D 180-151 Varistor voltage be selected by max.AC/DC line voltage
 ERZV14D182 or ERZV20D182

Precautions in surge protection design (Parameters to be considered for ZNR selection):

ZNR should be connected at load side of switch in a junction box.
 In a power conditioner, ZNR should be connected at the entrance of DC and AC power line respectively
 Along with a maximum DC volts and AC volts of PV system, varistor voltage should be selected.
 Voltage of the insulation test and withstanding test must be taken into account.
 For heavy duty use, E type, CK type and SC type are recommended instead of the above standard D types.

3. Relevant Technical Information and References:

JISC8981 Standards for safety design of electrical circuit in photovoltaic power generating systems for residential use
JISC8962 Testing procedure of power conditioner for small photovoltaic generating systems

4. More Information:

Home page for up-to-date information: <http://na.industrial.panasonic.com/products/circuit-thermal-protection/circuit-protection/znr-transientsurge-absorbers>