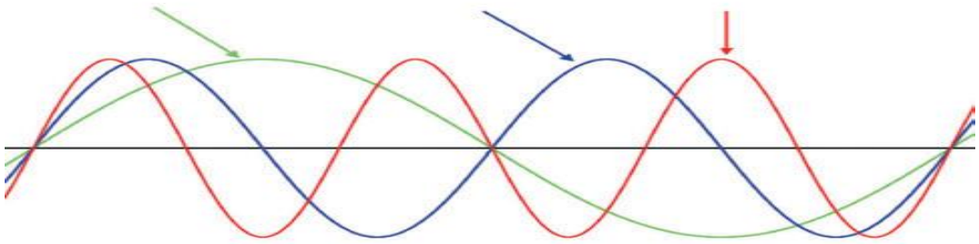
SURE RESISTORS

ISO 9001 : 2008 COMPANY

HARMONIC FILTER RESISTOR - DAMPING RESISTOR

Fundamental frequency f First harmonic 2f Second harmonic 3f



Quality of power is becoming ever more important for both suppliers and end users, as the number of devices that may feed harmonics in power systems is increased, resulting in higher line losses, interferences and resonances.
Harmonic Filters - made up by capacitors, inductors and resistors - help clearing harmonics which inevitably tend to occur. The LC circuit filters all spurious frequencies and only lets fundamental frequency through, while the Harmonic Filter Resistors (Harmonic Filters Resistors, also referred to as Damping Resistors) dissipate harmonic currents into heat.

We at 'SURE' Resistors can custom design Harmonic Filters Resistors from a few kW power up to tens of MW, as well as B.I.L. up to 600kV.

FEATURES

- Designed and manufacturing is as per IEC DIN EN 62271-1, 60815-1/2/3, 60529. and IEEE C57.32A-2020 standards
- Stainless steel resistor elements
- Excellent high voltage strength
- High overload capacity
- Low inductance resistor elements for easy tuning
- High thermal capacity
- Corrosion and heat resistant electrostatic paint for indoor and outdoor applications
- Insulators with high creepage distance on demand for highly polluted areas and high altitudes
- Bolted resistor element connections instead of welded connections, on demand
- Many types of enclosures
  - Stainless steel, hot dip galvanized steel or aluminium enclosures on demand
- Terminal:
  - HV Bushing Ceramic (outdoor) and Epoxy (indoor) or cable entry
- Mounting Insulators
  - Ceramic
- Compact design, dimensions can be adjusted according to customer's specific needs
- Cooling fans on demand

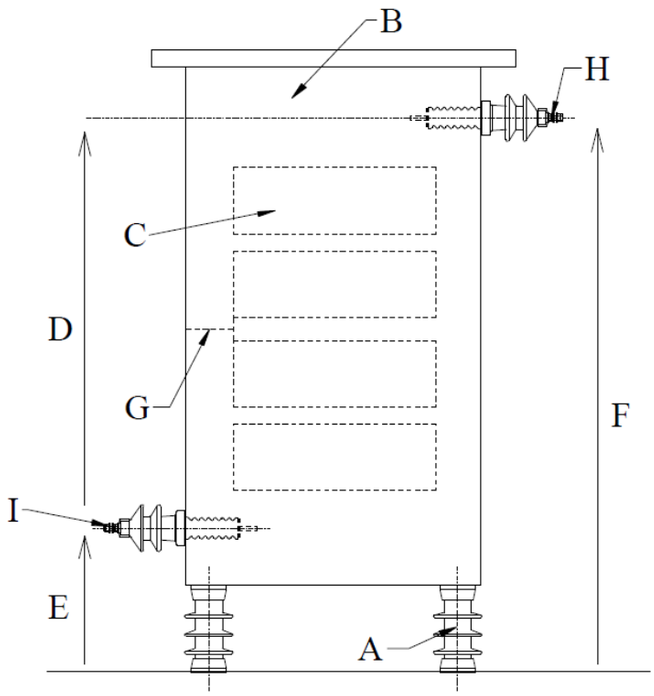
TECHINICAL SPECIFICATIONS

Voltage [kV]	12 / 24 / 36 / 52
Rated Voltage Withstand (50Hz, 60S) [kV]	28 / 50 / 70 / 95
Lighting impulse Voltage (1.2/50uS) [kV]	75 / 125 / 170 / 250
Altitude	Up to 1000 m
Installation	Indoor / Outdoor
Resistance Material	Stainless steel alloy
Protection Degree	IP 23 (outdoor), others on demand
Temperature	-40°C to 55°C

Cooling	Air natural / Oil natural / Air forced
Options	Taps with DIN or NEMA terminal configuration

TECHNOLOGY

INSULATION OF RESISTOR AND BIL LEVEL



Typical design of Filter Resistor

- *A outdoor insulators*
- *B housing of resistors under voltage*
- *C life parts of resistor*
- *D BIL level terminal to terminal*
- *E BIL level low voltage terminal to earth*
- *F BIL level high voltage terminal to earth*
- *G link connection between mid point of resistance and housing*
- *H In high voltage terminal bushing*
- *I Out low voltage terminal bushing*

The life parts comprise several resistor banks. One resistance bank can withstand up to 50kV$_{BIL}$.

INSTALLATION:

SIDE BY SIDE OR STACKED PHASES

In normal conditions the filter resistor must be installed side by side but if required, the phases can be
designed to be stacked or installed in the top of capacitor banks to be specified at tender stage.