**Fuzetec** is dedicated to provide a full range of overcurrent circuit protection for telecommunication and networking devices with our compact size, flexible design construction and cost competitive Polymeric Positive Temperature Coefficient ( **PPTC** ) resettable fuses.

For mover than 10 years, Fuzetec has been providing test proven products to assist telecom equipment to meet the test requirements of power cross and power induction surge defined by ITU-T, UL and Telecordia GR-1089 safety standards.

- GR-1089
  Electromagnetic Compatibility and Electrical Safety - Generic Criteria for Network Telecommunications Equipment
- UL 60950
  Information Technology Equipment - Safety - Part 1: Genera Requirements
- UL 497A
  Standard for Secondary Protectors for Communications Circuits
- ITU-T K20/ K21
  Resistibility of telecommunication equipment installed in a telecommunications centre/ installed in customer premises to overvoltages and overcurrents

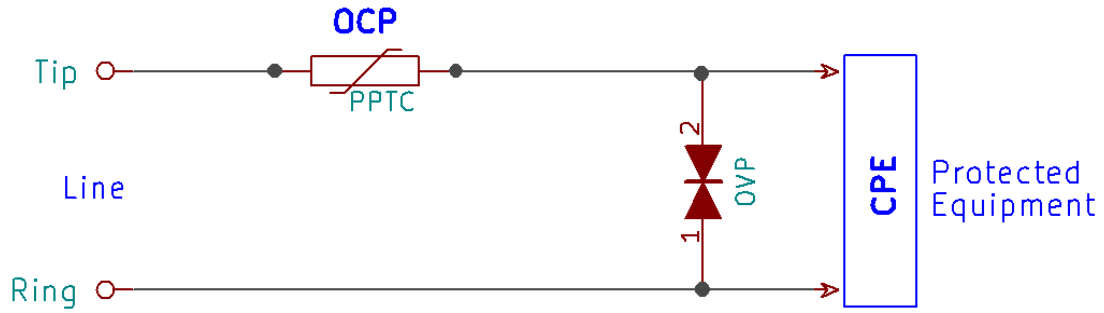
| Key Features |
|---|
| ➢ **Resettable overcurrent circuit protection** |
| ➢ **Agency recognition: UL, cUL, TUV** |
| ➢ **Function-oriented design (High hold current/Fast trip time/High Ambient Temp/High Rated Voltage/High Rated Current )** |
| ➢ **Resistance range binned and sorted available** |
| ➢ **RoHS Compliant, Lead-Free and Halogen-Free( HF )** |

| Applications |
|---|
| ➢ **Customer Premises Equipment** |
| ➢ **Central Office Switching Equipment** |
| ➢ **Short-haul/Intrabuilding communication equipment** |

## Customer Premises Equipment (CPE)

CPE is any terminal and associated telecommunication hardware located at a service subscriber's premises and connected with a carrier's telecommunication channel or Public Switched Telephone Network (PSTN). CPE generally refers to devices such as broadband internet routers, switches, Home Gateways, Set-top Boxes, Telephone handsets and any service provider custom devices.

Basic Reference Circuit Block




OCP = Over Current Protection  OVP = Over Voltage Protection

PPTC = Polymeric PTC resettable fuse

| North America Market Regulatory Requirements |
|---|
| ◆ UL 60950-1 |
| ◆ GR-1089 port type3 |
| ◆ UL 497A |

| Fuzetec Part Number |
|---|
| FRH150-600MF, FRH160-600MF |

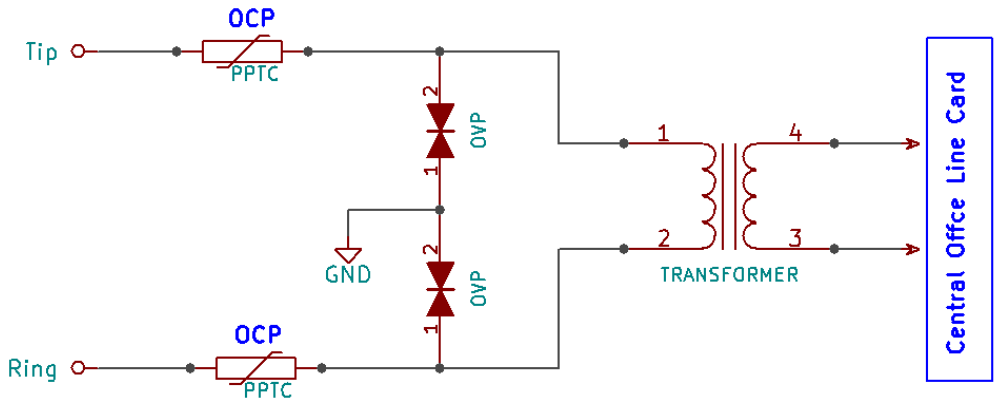
| Europe/Asia/ South America Market Regulatory Requirements |
|---|
| ◆ ITU-T K21 |

| Fuzetec Part Number |
|---|
| FRH120-250F , FRH120-250VF, FRH145-250F, FRH145-250VF, FRH-180-250XF |

# Central Office ( CO ) Switching System

Central Office refers to a common telecommunication carrier switching equipment which local loops are terminated and switched. General Central Office equipments are Digital/Analog Linecard, T1/E1 Linecard, ISDN Linecard, Servers and xDSL modems.

Basic Reference Circuit Block




## North America Market Regulatory Requirements

- **GR-1089 port type 1**

## Fuzetec Part Number

**FRH150-600MF, FRH160-600MF**

## Europe/Asia/ South America Market Regulatory Requirements

- **ITU-T K20**

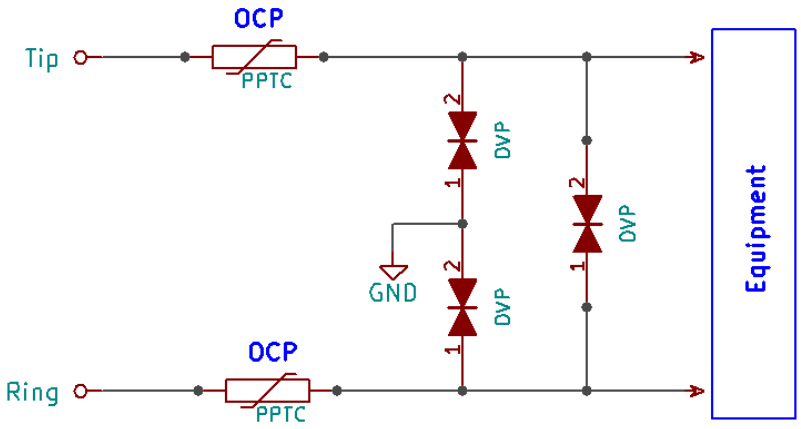
## Fuzetec Part Number

**FRH120-250F , FRH120-250VF, FRH145-250F, FRH145-250VF, FRH-180-250XF**

# Short-haul/Intrabuilding Communication Equipment

Short-haul or Intrabuilding communications equipment refers to device which is not connected directly to the PSTN and is exposed to lower level of risks. LAN equipment, Wireless local loop (WLL) device and VoIP base stations are general intrabuilding application.

Basic Reference Circuit Block




## North America Market Regulatory Requirements

- **GR-1089 port type 2 & 4**

## Fuzetec Part Number

**FRH150-600MF, FRH160-600MF**

## Europe/Asia/ South America Market Regulatory Requirements

- **ITU-T K21**

## Fuzetec Part Number

**FRH120-250F , FRH120-250VF, FRH145-250F, FRH145-250VF, FRH-180-250XF**

## Agency Specification Selection Guide For Telecom and Networking Applications

| Part Number | Environmental/Lightning Surge * | AC Power Fault (Power Cross)* |
|---|---|---|
| **FRH150-600MF** | GR-1089 - 2.5KV, 2/10us | UL 60950 - 600V ac, 40A |
| **FRH160-600MF** | 1.0KV, 10/1000 us | GR-1089 – 600V ac, 60A |
| | ITU-T K20/K21 - 4KV, 10/700 us | UL497A – 600V ac, 40A |
| | TIA 968-A – 1.5KV, 10/560 us | ITU-T K20,K21 - 600V ac, 1 A |
| | 800V, 10/560 us | ITU-T K36 - 250V ac, 3A/15 min |

| Part Number | Environmental/Lightning Surge * | AC Power Fault (Power Cross)* |
|---|---|---|
| **FRH120-250F** | ITU-T K20/K21 - 1.5KV 10/700 us | ITU-T K20,K21 - 230V ac, 23A/15 min |
| **FRH120-250VF** | | 600V ac, 1A/1 sec |
| **FRH145-250F** | | |
| **FRH145-250VF** | | |

| Part Number | Environmental/Lightning Surge * | AC Power Fault (Power Cross)* |
|---|---|---|
| **FRH180-250XF** | ITU-T K20/K21 - 1.5KV 10/700 us | ITU-T K20,K21 - 230V ac, 23A/15 min |
| | ITU-T K20/K21 - 4KV 10/700 us | ITU-T K36 - 250V ac, 3A/15 min |

*Device subject to lightning surge test must not be damaged and continue to operate after surge

*Device subject to AC Power Fault (Power Cross) must not be fragment, become fire or an electrical safety hazard (referred to as passing non-operationally)