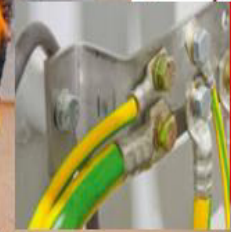




Very Poor Investment Wasting Public Money (Street Light Power Connection)

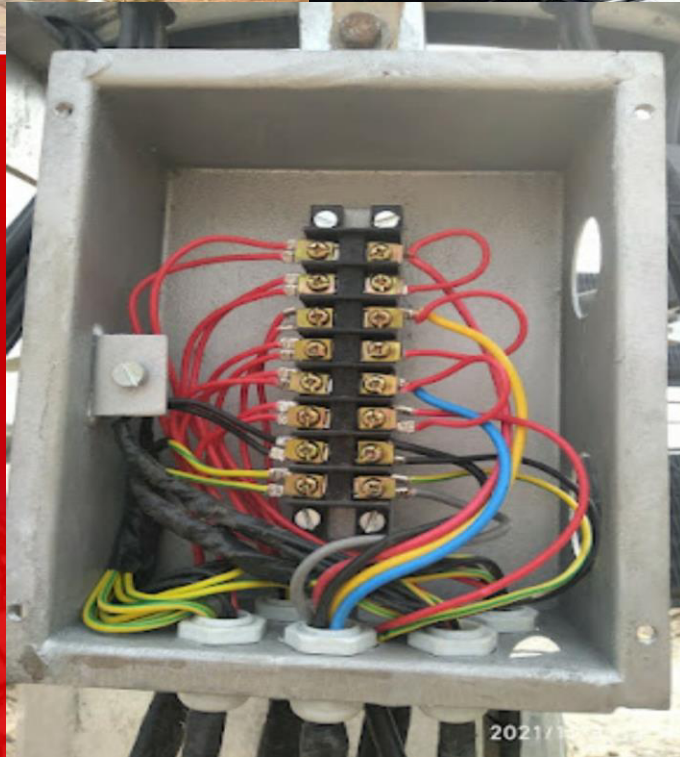
No Surge Protection/No Good Quality Junction Box & Terminal Block) NO NBC2016 and Electrical Wiring Rule Followed



Common Causes of Electrical Problems in Your Home



- Overloading
- Electrical Surges
- Power Sags And Dips
- Uncovered Junction Box
- Light Switches Are Not Working
- Flickering Light
- Limited Outlets
- Lack Of GFCIs
- Overwired Panel
- Aluminum Wiring
- Backstabbed Wires
- Electric Shock



Think Smart Install Smart & Utilization Efficient Way

SMART & INTELLIGENT POLE



Feeder Pillar With Three Phase Clean Control Power Supply

Metal Junction Box with Good Quality Cable, Terminal Blk ,

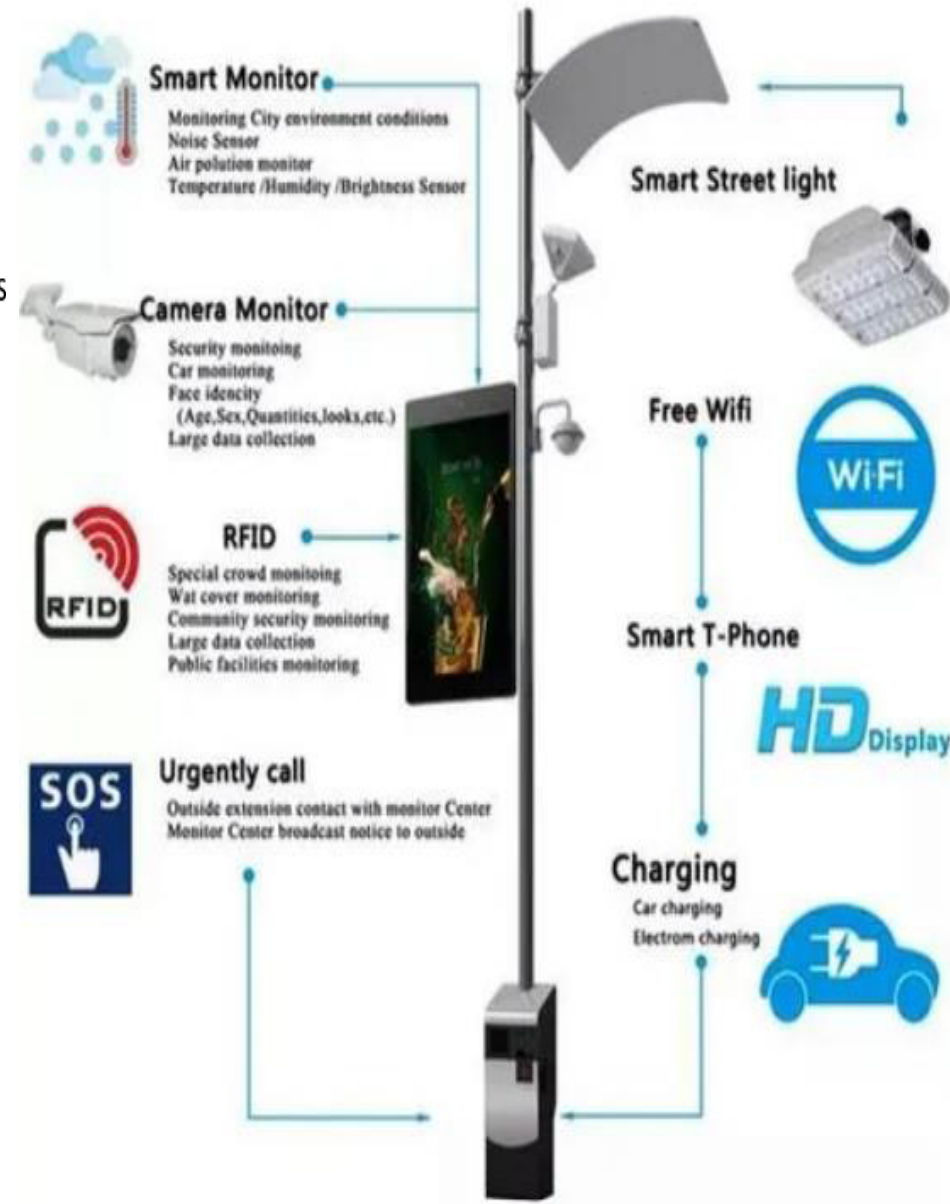
Fuse, MCB and Surge Protection for Power Supply and Communication Ports

Effective Maintenance Free Earthing as per IS3043

All Electronics ,Data, Signal and Communication Products

Industrial Grade Suitable Outdoor Condition

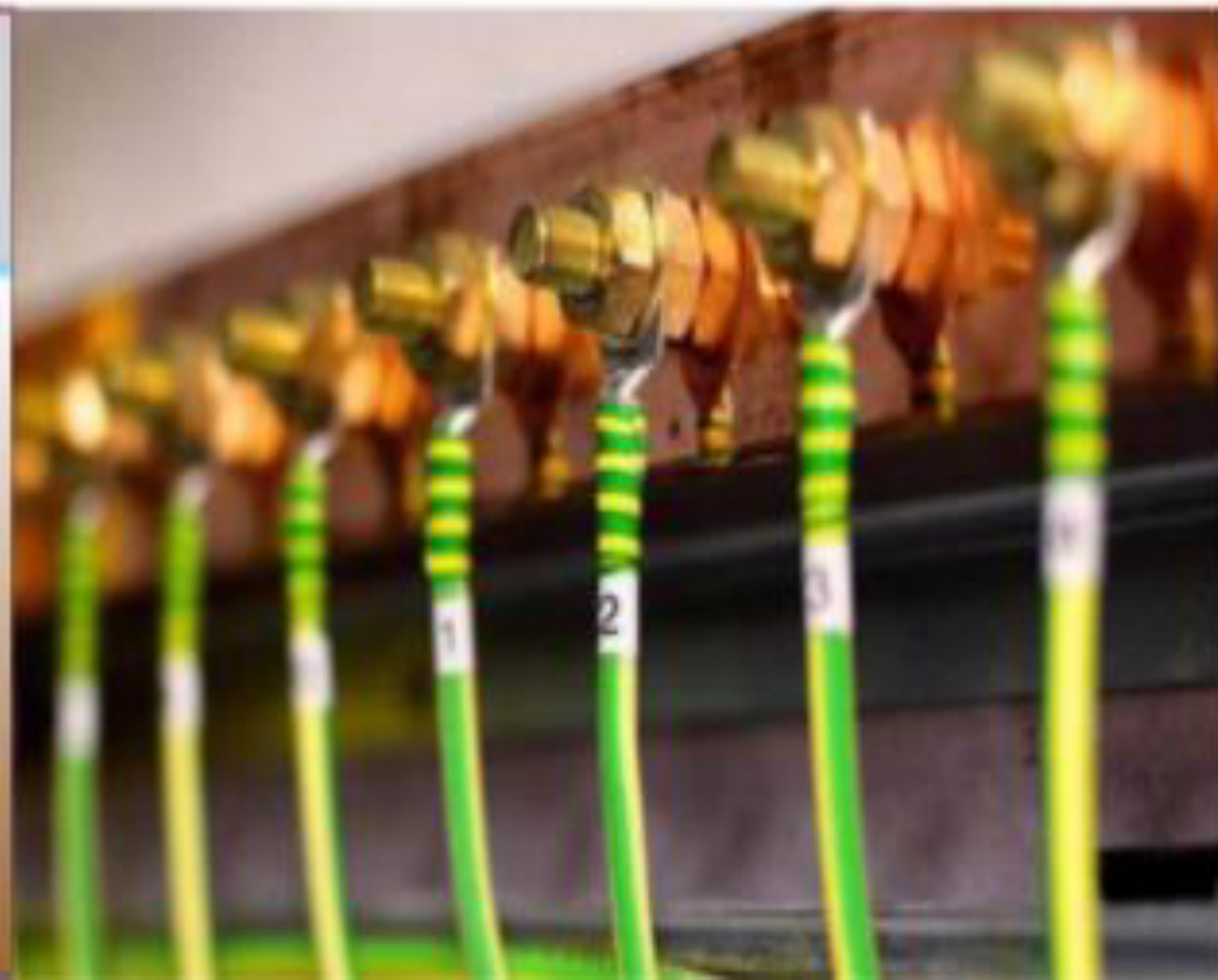
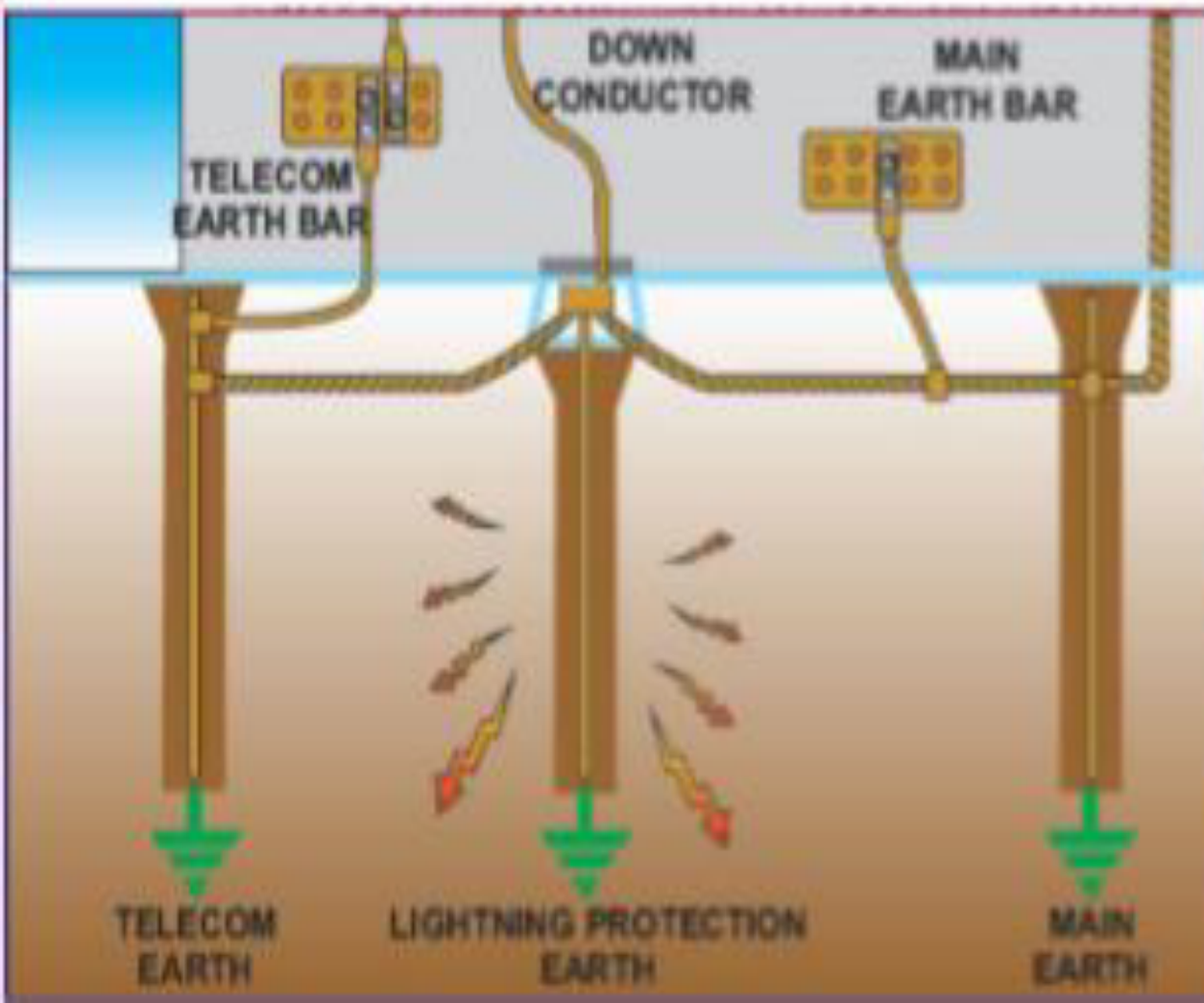
Smart Street Box



Earthing is Nothing less than Engineering Follow IS3043(2018),IEEE80,IEC62305

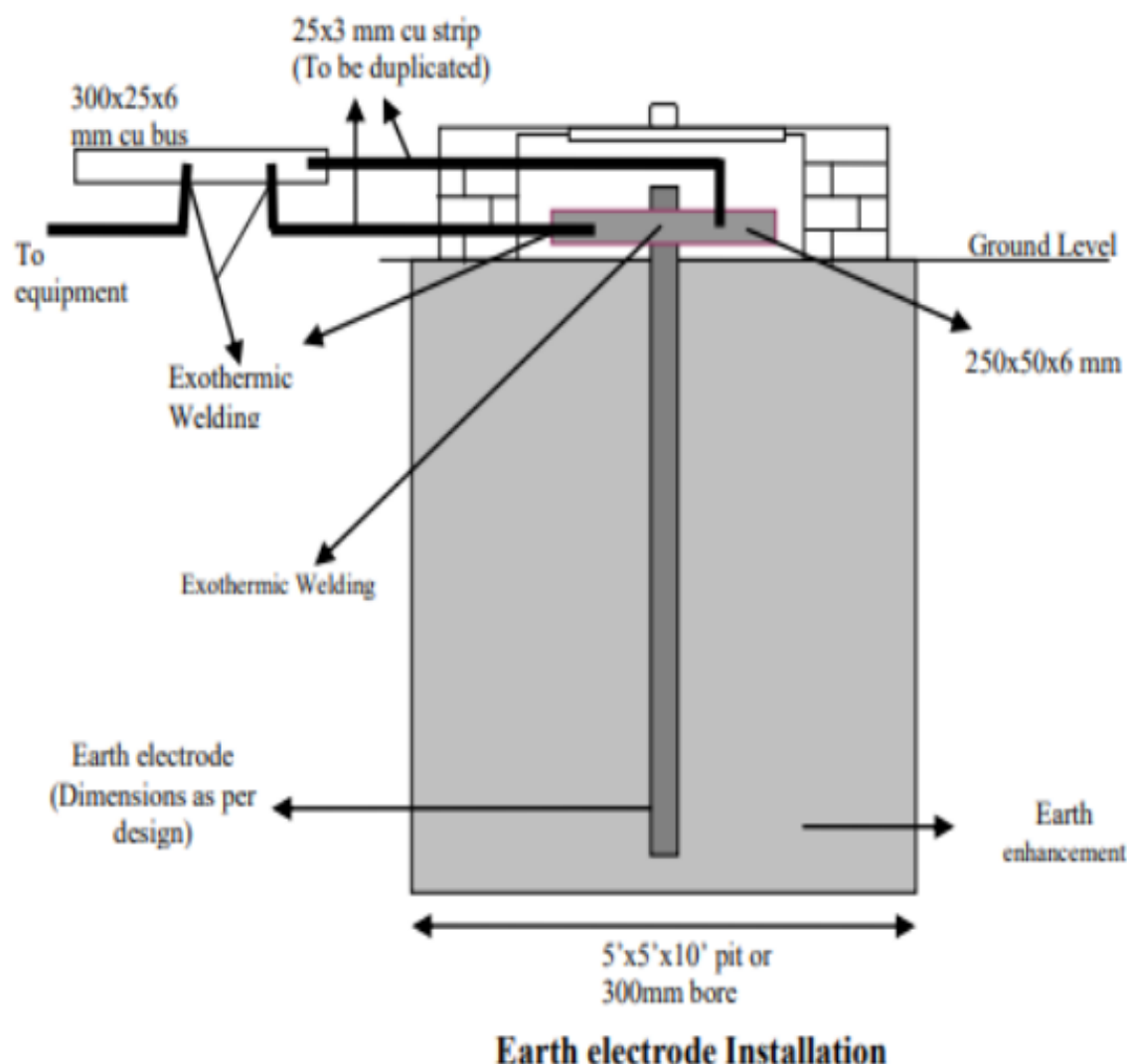
Earthing Distance Maximum 500mtr allowed for Electrical and 300mtrs allowed for Low Voltage Equipment's.

Shortest Discharge Path , Less Joints No Sharp Bend ,Round Conductor for routing Earthing up to Equipment's, all buried Joint should be Exothermic Weld



Maintenance Free Earthing installation as per IS3043(2018)

General Arrangements for Earth System



S.N.	Installations/ Current Capacity	IR Value Required	Soil Type/ Resistivity	Earth System
1.	House hold earthing/ 3kA	8 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ between 50 to 2000 ohm-mtr	Single Electrode
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
2.	Commercial premises Office buildings/ 5kA	2 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
3	Transformers, substation earthing, LT line equipment/ 15kA	1 - 2 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
4	Transformers, substation earthing, HT line equipment/ 40kA	less than 1 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
5	Lightning arresters, extra high current applications etc./ 50kA	less than 1 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
6	PRS, UTS, RTUs, FOIS, COIS, ATMs and data processing centre etc./5KA	less than 0.5 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes

Freedom Connectors Safe Electric Wire Joints



- Electrical parameters: 250V/32A
- Product specifications: 12.4x20.5x14.5mm (LX W x H)
- Applicable wire: 0.75-2.5mm²"e+f" AGW28-14
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 2 digits
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

FC222-412



- Electrical parameters: 250V/32A
- Product specifications: 17x20.5x14.5mm (LX W x H)
- Applicable wire: 0.75-2.5mm²"e+f" AGW28-14
0.75-4mm² "f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 3 digits
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66


FD222-413



- Electrical parameters: 250V/32A 600V/20A[Ⓢ]
- Product specifications: 40.2x21x14.5mm (LX W x H)
- Applicable wire: 0.08-2.5mm²"e+f" AGW28-14
0.08-4mm² "f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 8digits
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

FC222-418



- Electrical parameters: 600V/32A
- Product specifications: 18.5x39.2x14.4mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 3 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

FC313



- Electrical parameters: 250V/32A
- Product specifications: 21.92x21x14.5mm (LX W x H)
- Applicable wire: 0.75-2.5mm²"e+f" AGW28-14
0.75-4mm² "f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 4digits
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66


FC222-414



- Electrical parameters: 250V/32A 600V/20A[Ⓢ]
- Product specifications: 26.6x21x14.5mm (LX W x H)
- Applicable wire: 0.75-2.5mm²"e+f" AGW28-14
0.75-4mm² "f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 5digits
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66


FC222-415



- Electrical parameters: 600V/32A
- Product specifications: 8.6x39.2x14.4mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 1 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

FC221




- Electrical parameters: 600V/32A
- Product specifications: 13.6x39.2x14.4mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 2 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

FC212


Freedom Connectors Safe Electric Wire Joints



- Electrical parameters: 600V/32A
- Product specifications: 25.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 2 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66


FC223-2P



- Electrical parameters: 600V/32A
- Product specifications: 30.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 3 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

FC223-3P



- Electrical parameters: 600V/32A
- Product specifications: 35.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 4 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66


FC223-4P



- Electrical parameters: 600V/32A
- Product specifications: 40.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 5 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66


FC223-5P



- Electrical parameters: 600V/32A
- Product specifications: 60.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 10 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66


FC223-10P



- Electrical parameters: 600V/32A
- Product specifications: 65.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 12 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: Gray + Orange, Yellow, Blue, Green (handle)
- Material: PA66


FC223-12P



- Electrical parameters: 600V/32A
- Product specifications: 45.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 6 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

FC223-6P



- Electrical parameters: 600V/32A
- Product specifications: 55.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 8 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

FC226-8P

Freedom Connectors Safe Electric Wire Joints



- Electrical parameters: 400V/32A
- Product specifications: 25.9x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 2into 4out
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange, blue (handle)
- Material: PA66


FC424



- Electrical parameters: 400V/32A
- Product specifications: 33.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 2into 6out
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange, blue (handle)
- Material: PA66


FC426



- Electrical parameters: 250V/24A 300V/20A[◎]
- Product specifications: 20.5x8.5x15.5mm (LX W x H)
- Power supply side: 1.0-2.5mm²"s" AWG 14-12
- Lighting equipment measurement: 0.5-2.5mm²"s+f+st" AWG 20-16
- Can withstand instantaneous peak voltage: 4KV
- Stripping length:  (9-11mm) /0.39in
- Connection method: plug-in
- Color: gray
- Material: PA66

FC224-101



- Electrical parameters: 600V/32A
- Product specifications: 35.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 3into 6out
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + blue, Yellow, orange (handle)
- Material: PA66


FC436



- Electrical parameters: 600V/32A
- Product specifications: 48.5x41.4x14.5mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 3into 9out
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + blue, Yellow, orange (handle)
- Material: PA66


FC439



- Electrical parameters: 600V/32A
- Product specifications: 18.5x39.2x14.4mm (LX W x H)
- Applicable wire: 0.08-4mm²"f" AWG 28-12
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 3 lines
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

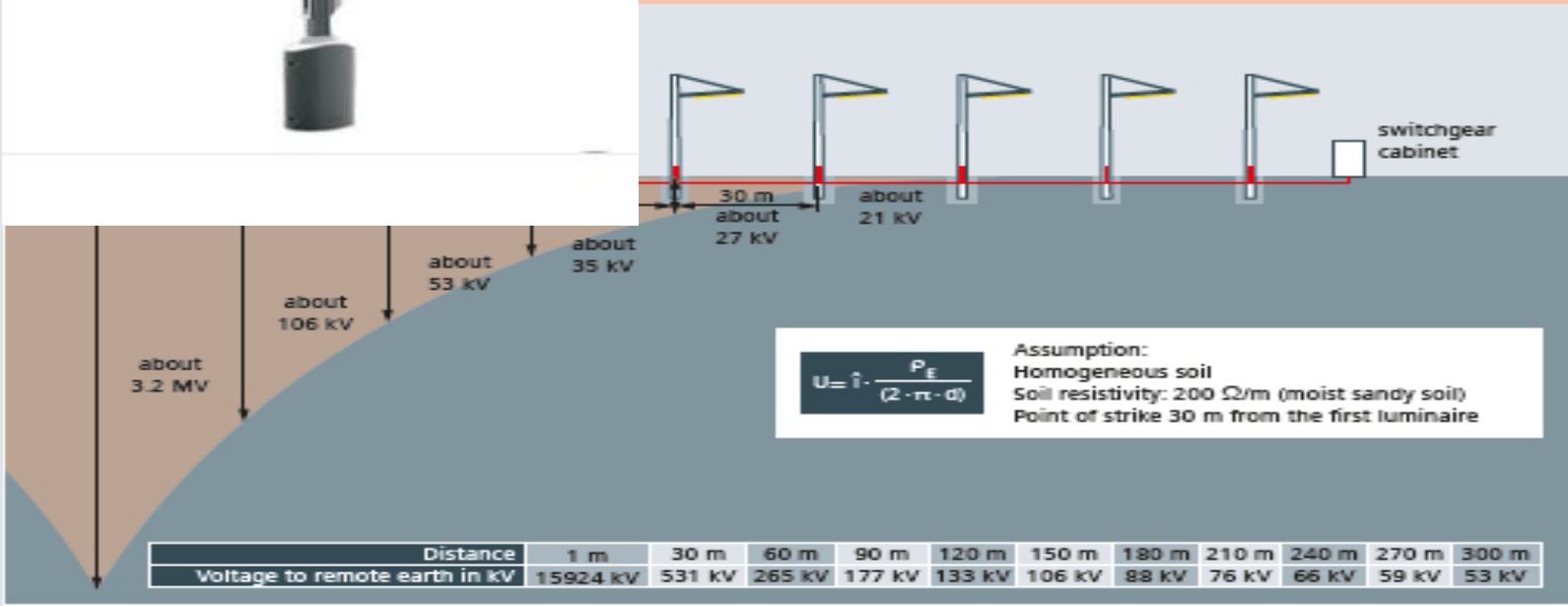
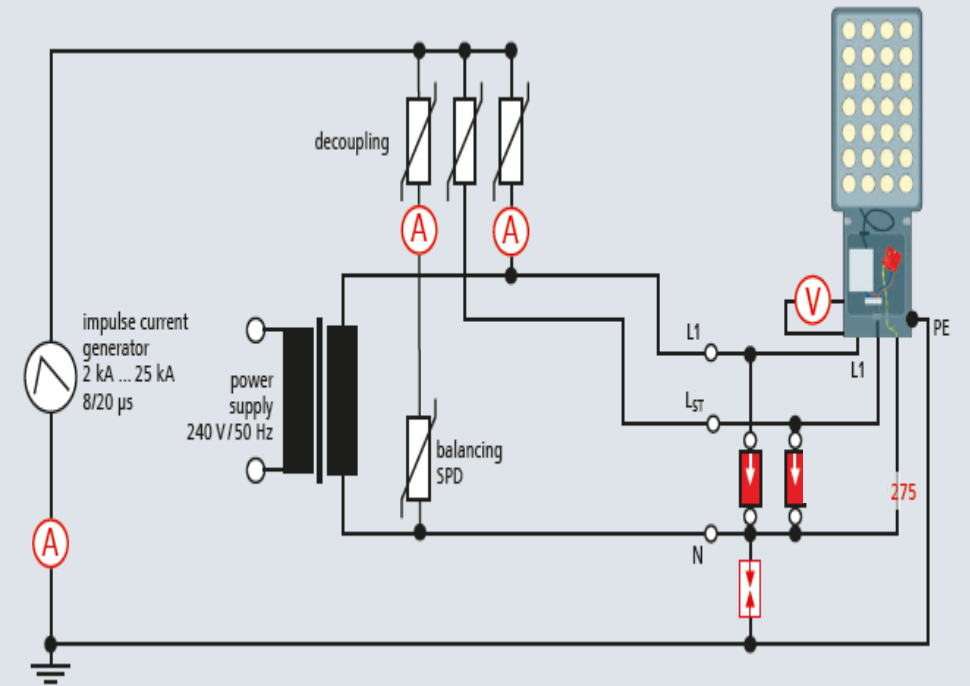
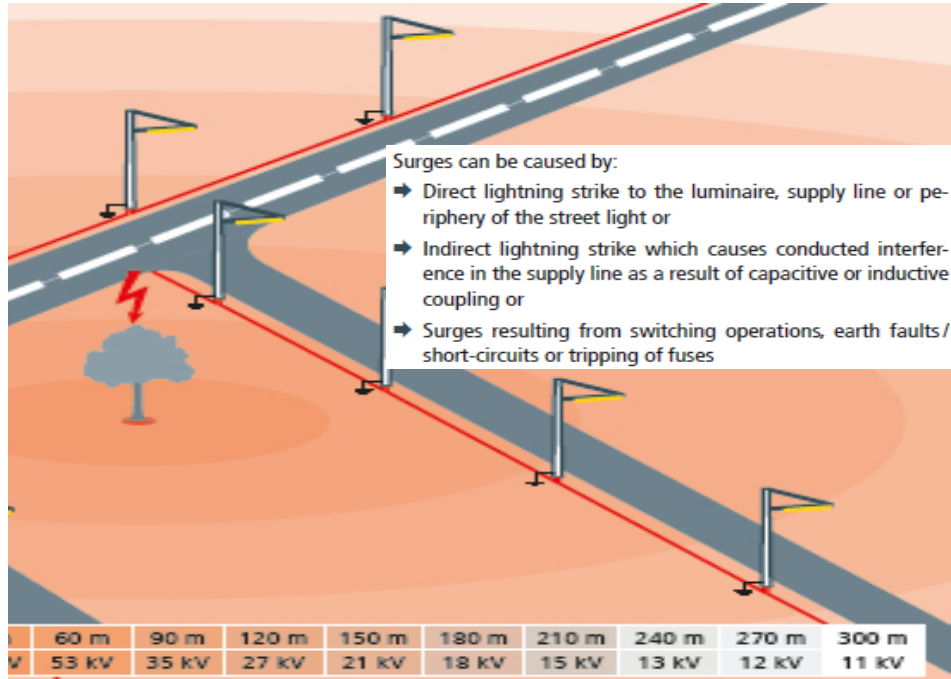
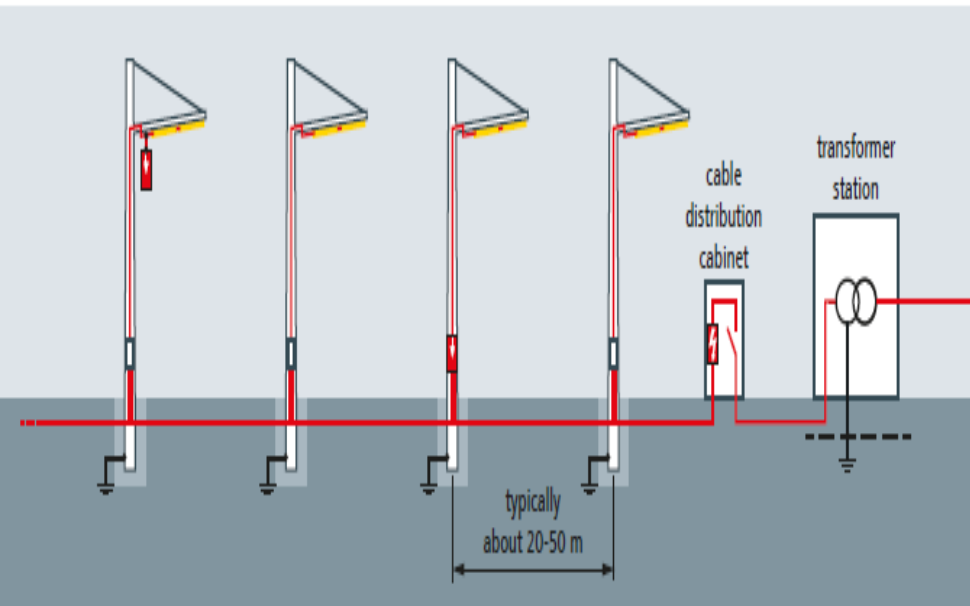
FC313



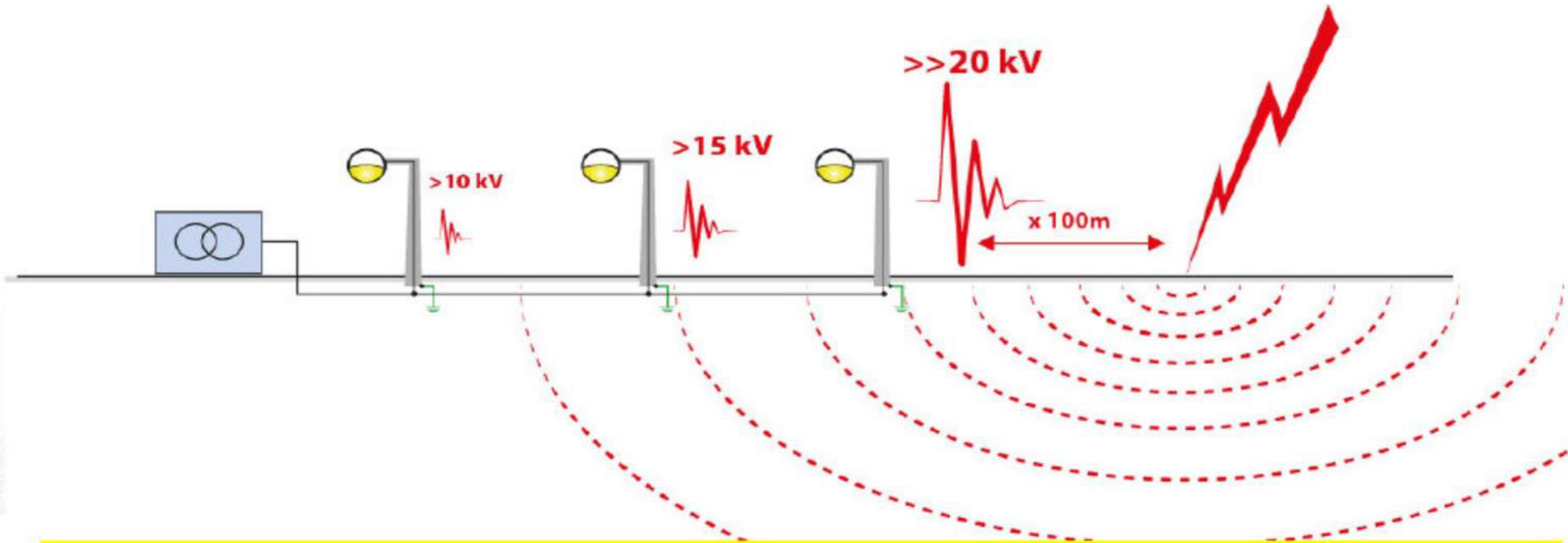
- Electrical parameters: 600V/32A
- Product specifications: 43x30.8x8.2mm (LX W x H)
- Applicable wire: 0.2-4mm² AWG 28-14
- Can withstand instantaneous peak voltage: 4KV
- Number of channels: 1 bit
- Stripping length:  (9-10mm) /0.37in
- Connection method: plug-in
- Color: gray + orange (handle)
- Material: PA66

FC121

Streetlight and Impact from Lightning (do Installation Surge Protection)



Indirect effects of Lightning



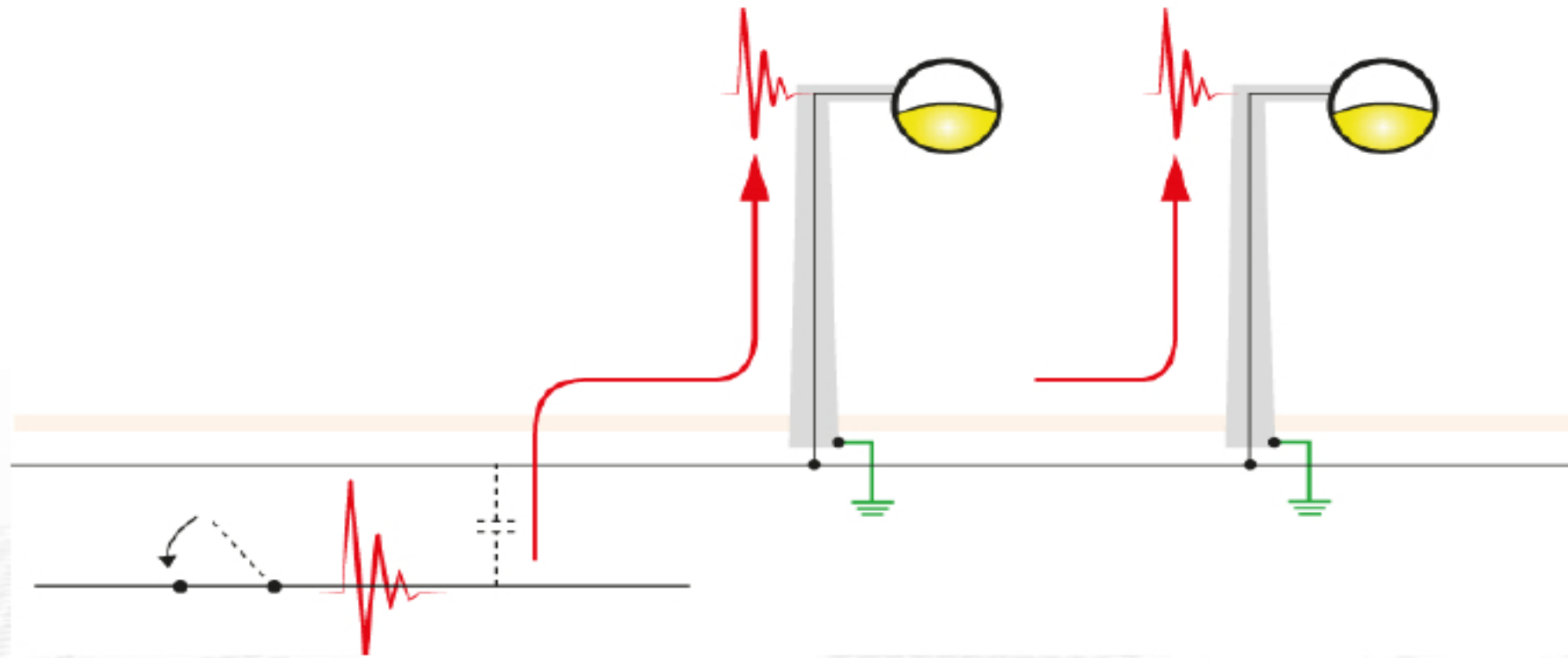
Source : indirect effects of lightning

Description : impulse surge ($\times 100\mu\text{s}$), tenth of kV, tenth of kA

Consequences → Destruction Drivers/LEDs

Solutions → Surge Protectors (SPDs)

Switching surges



Source : Switching on AC network, Ferromagnetic power supply ,
neighbouring with other power networks (Railway, HV..)

Description : impulse surge ($\times 100\mu\text{s}$), several kV, hundredth of Amp

Consequences → Ageing Drivers/LEDs

Solutions → SPDs



Products

Surge Protector



Type 1 SPD-lightning current arresters

Combined, spark gap and MOV
 Iimp 25 kA / 100 kA $U_p \leq 1.5$ kV
 No follow current, zero leakage current
 Full coordination with Type 2 SPD



Type 2 SPD – surge arresters

Combined, spark gap and MOV
 U_c 75 to 760 V AC
 I_n 20 kA / I_{max} 40 kA
 $U_p \leq 1.35$ kV



Type 1 and 2 SPD -combined arresters B+C

Combined, spark gap and MOV
 Iimp 12.5 kA / 50 kA
 $U_p \leq 1.5$ kV
 No follow current, zero leakage current

SPD PV - surge arrester

Combination of MOV and spark gap
 PV Type 2 SPD
 MOV surge arrester
 UCPV 170 to 1500 V DC
 I_n 15 to 20 kA
 I_{max} 40 kA

Surge Protection for Serial and Co-Axial Communication Port

All data, control and telephone cables entering and leaving the communications building require protection. The protection must be placed at the protection boundary and the protective earth connected to station earth. The aim is to divert energy at the boundary.

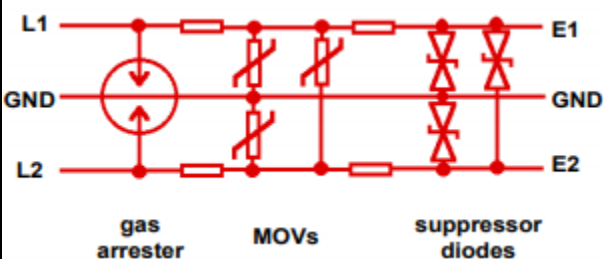
Data circuits require protection dependent upon their operating voltages and currents. Multistage series connected transient barriers should be employed. Figure 21 shows a typical schematic of Surge rating should be 20KA for an 8/20us impulse and the clamping voltage greater than the peak operating voltage.

Telephone lines require protection at the MDF. The protection should be multistage, when used with digital solid state telephone switches. Configuration will depend upon the termination method, eg KRONE[®], ADC, Reiche etc. Protect all incoming lines and external extensions. Generally internal extensions require no protection.

LAN systems require specialised protection specific to the LAN configuration. LAN line cards are particularly sensitive to transient overvoltage's and MUST be protected. Specialised protectors are available for the following protocols:

- RS232 in both DB9 and DB25 connector types
- RS485 and RS422 in DIN rail and DB9 configuration
- Thin Ethernet with in line and protected T BNC configuration
- Thick Ethernet with in line N type and DB15 AUI configuration
- RJ45 for UTP with hub protectors and individual terminal protectors

Ensure all LAN type protectors do not inhibit LAN performance. Only choose CAT5 UTP protectors.



As well as the outer conductors of coaxial feeders the inner conductors must also have protection applied to divert energy on the inner conductor to ground. The application of surge protection to UHF and microwave circuits is limited by frequency, return loss and insertion loss considerations. Typical coaxial surge protectors consist of a fast acting gas filled arrester connected between line and ground. Figure 19 shows a typical coaxial surge protector for type N connectors. This is a bulkhead mounting type.



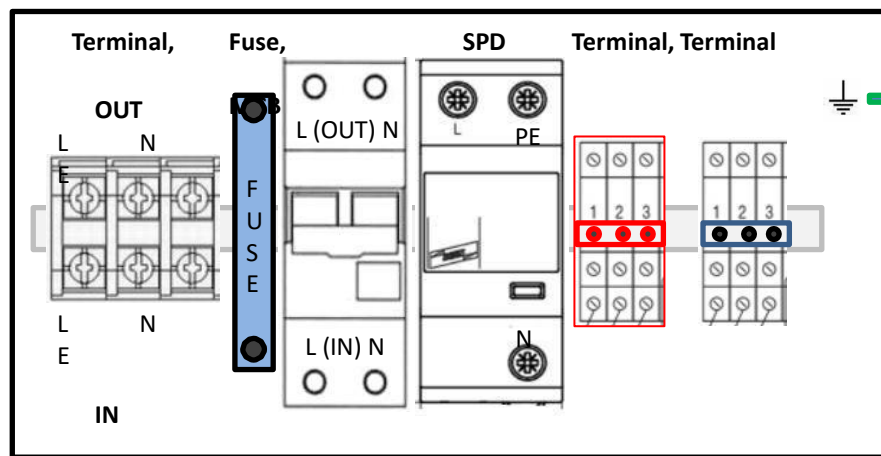
Arrester flashover voltage should equal twice the peak line voltage. Example in a 50 ohm line with 50W transmitter, peak voltage = 70.7V. Minimum recommended gas arrester BV = 140V. Nearest value = 230V. Surge rating should be 20KA for an 8/20us impulse.

Gas filled arresters are unsuitable for high power HF and VHF transmitters ($\geq 1\text{KW}$) unless the transmitters incorporate return power shutdown circuitry. A gas filled arrester once fired will remain in the conducting state by the presence of RF energy. This will destroy the arrester unless the transmitter has shutdown circuitry which detects the impedance discontinuity.

Alternatively utilise spark gap arresters with arc detection and shutdown circuitry.

For microwave link equipment an alternative and more effective solution is the quarter wave stub protector. These units must be tuned to the frequency in use but are capable of reasonably large bandwidth. For example a quarter wave stub protector centred on 2.4GHz has a usable bandwidth of $\pm 100\text{MHz}$. Figure 20 shows a typical unit.





Enclosure

SPD Wire and Connections

Use Junction BOX CRCA

Earthing Should be near and Effective Value below 2.00 – 5.00 Ohm

AC INPUT Connection + Earthing Shorting Block Wire Size 6.00 Sq mm

Din Channel Connected with Earthing Wire

Line + Neutral Wire Size 6.00Sqmm

Terminal Block 10.00 Sq mm Normal for Line & Neutral

One Fuse Terminal Block 6.00Sqmm with Line

Connect MCB/RCCB

Surge Protection B+C Single Phase L N and PE wire Size 6.00 Sq mm Parallel in Connection

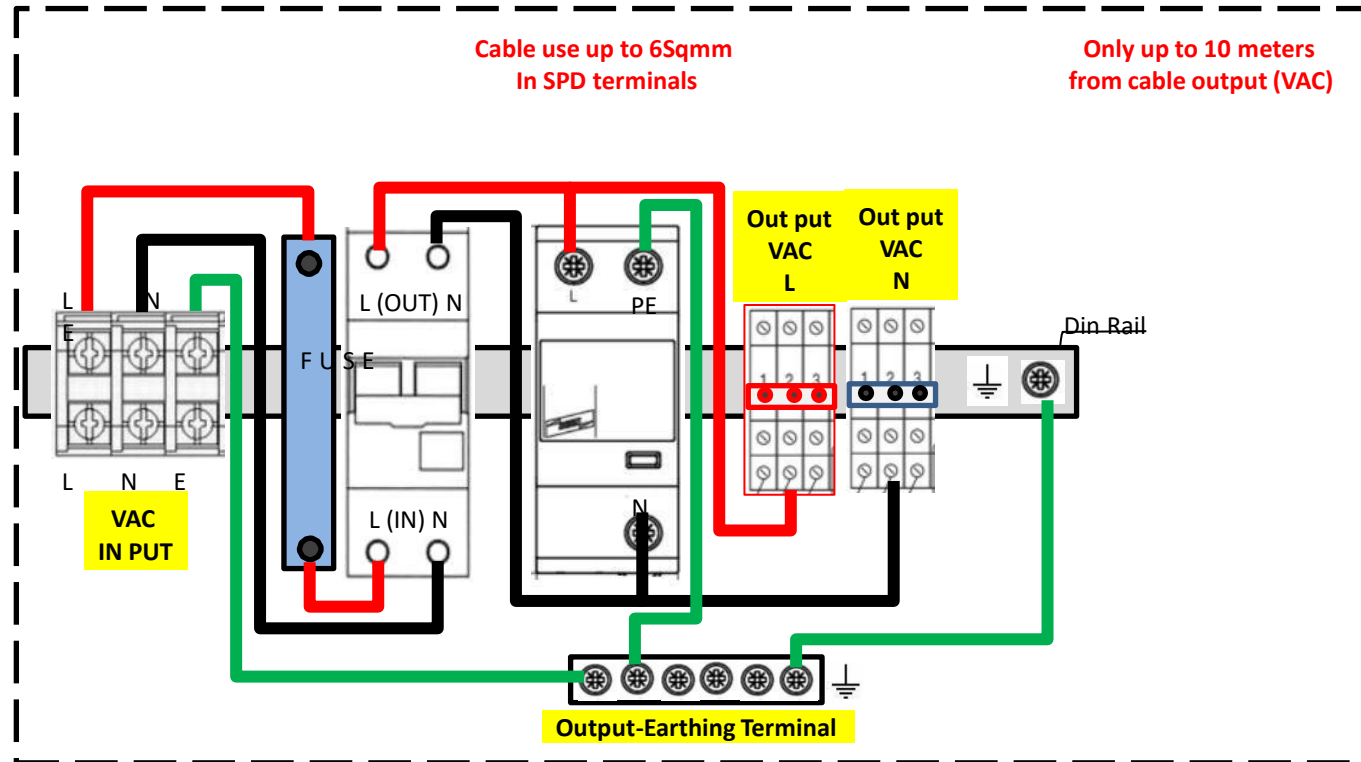
Protected AC Connection Out

Terminal Block for L N and PE

Only One Wire in Terminal with Proper Crimp

Avoid Overlapping and Cross Wire while routing inside JB.

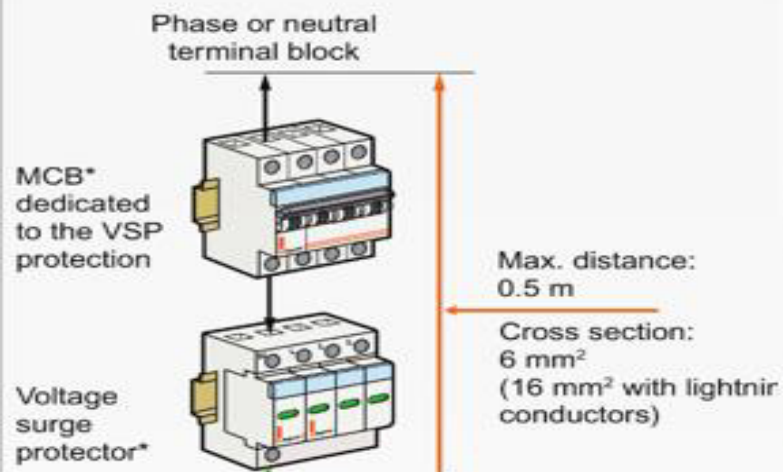
Note Protected AC Connection Length should be max 9.00 Mtrs 10.00 Mtrs



Wiring

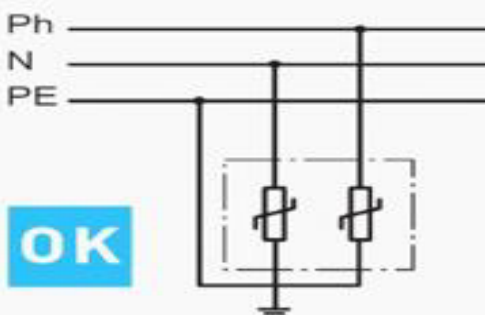
SPD capacity		Cross section (mm ²)
Class II SPD	S Standard: $I_{max} < 15 \text{ kA}$ (x 3-class II)	6
	E Increased: $I_{max} < 40 \text{ kA}$ (x 3-class II)	10
	H High: $I_{max} < 70 \text{ kA}$ (x 3-class II)	16
Class I SPD		16

In practice it is recommended that the total length of the surge protection device circuit **does not exceed 50 cm**. This requirement is not always easy to implement, but using the available exposed conductive parts nearby may help.



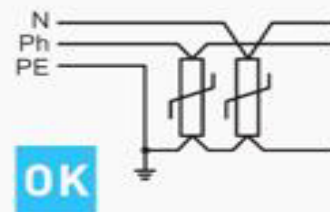
SPD wiring configuration #4

Connection conductors as short as possible with return conductor from the earth terminal close to the live conductors. The impedance of the discharge circuit of the current shunted by the surge protection device can be broken down into two parts.



SPD wiring configuration #2

Input and output conductors physically well separated and connected on the same terminal.



SPD wiring configuration 2

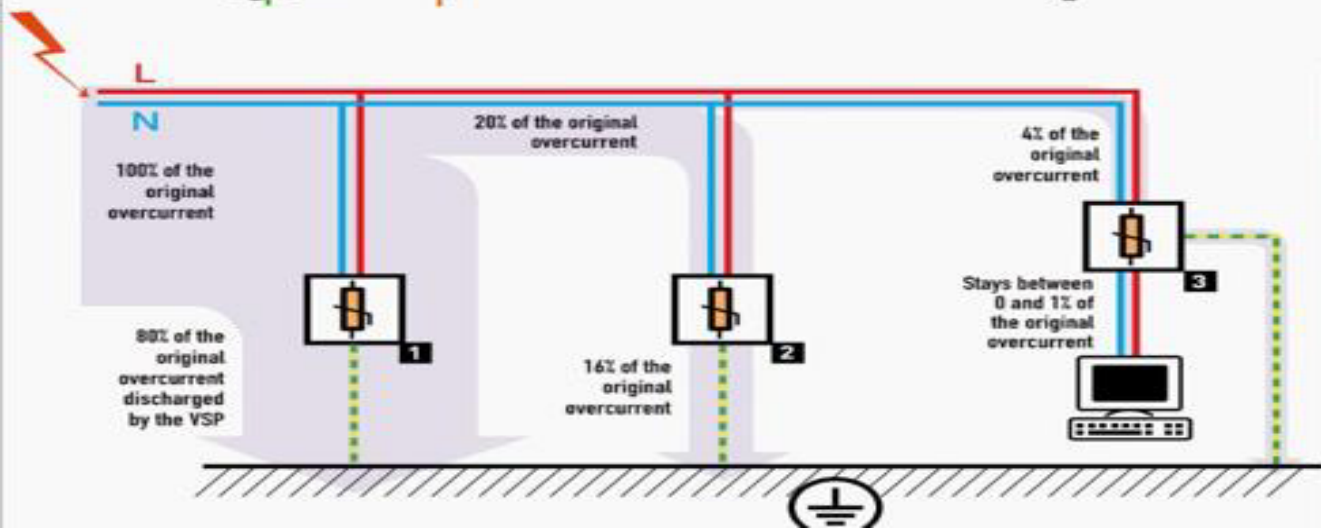
The first, the [earthing electrode](#), is formed by conductors, which are usually wires, and by the resistance of the ground. Its essentially inductive nature means that its effectiveness decreases with the frequency, despite wiring precautions (limitation of length, 0.5 m rule). The second part of this impedance is less visible but essential at high frequency because it is in fact made up of the stray capacity between the installation and earth.

Of course the relative values of each of these components vary according to the type and

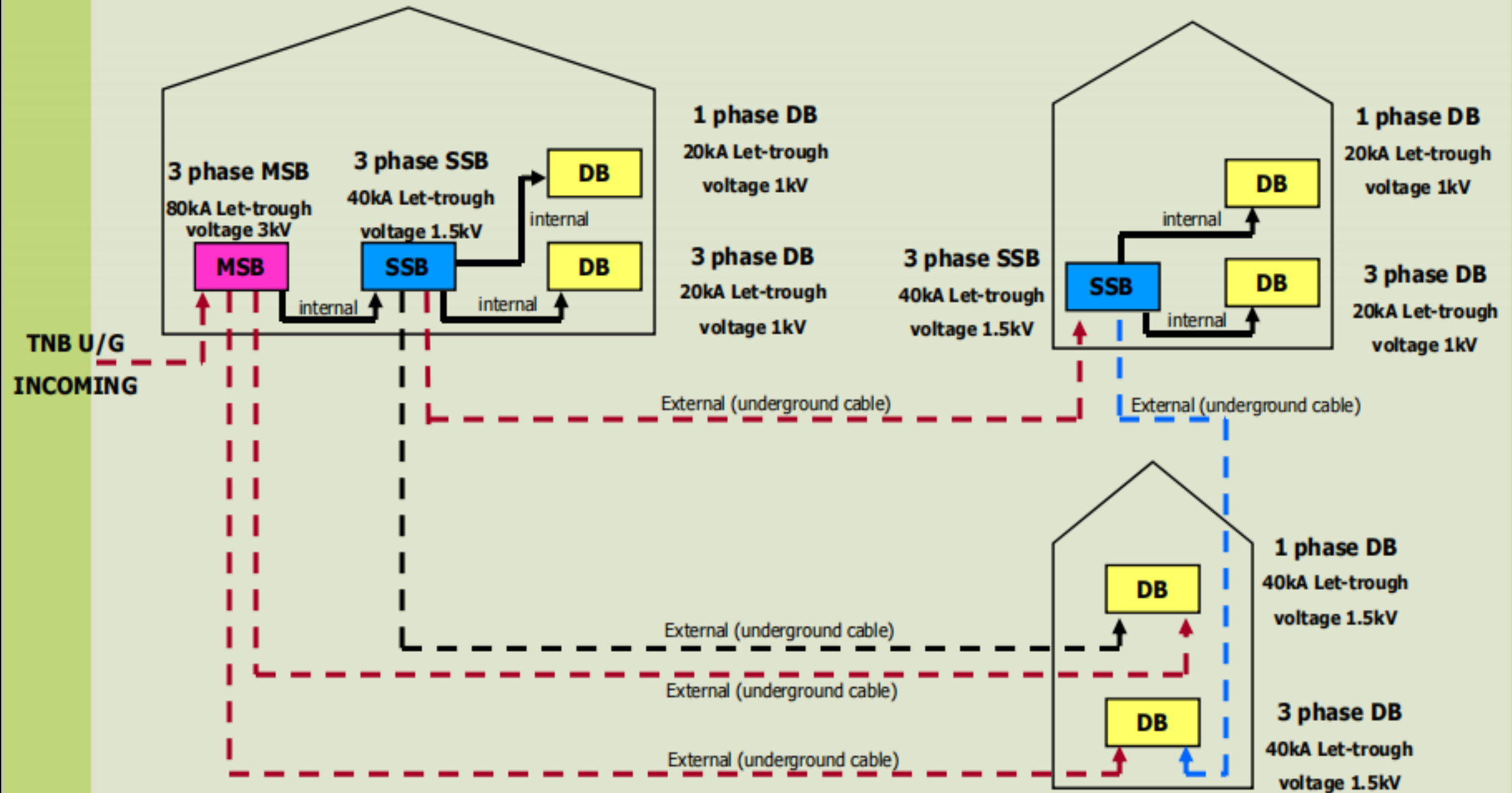
Table 1 – Maximum line length between SPDe and device to be protected

SPD position		At origin of installation		Not at origin of installation	
Conductor cross-section		wiring (domestic)	large cables (industry)	wiring (domestic)	large cables (industry)
Composition of the bonding system	PE conductor	< 10 m	10 m	< 10 m*	20 m*
	meshed/equipotential	10 m	20 m	20 m*	30 m*

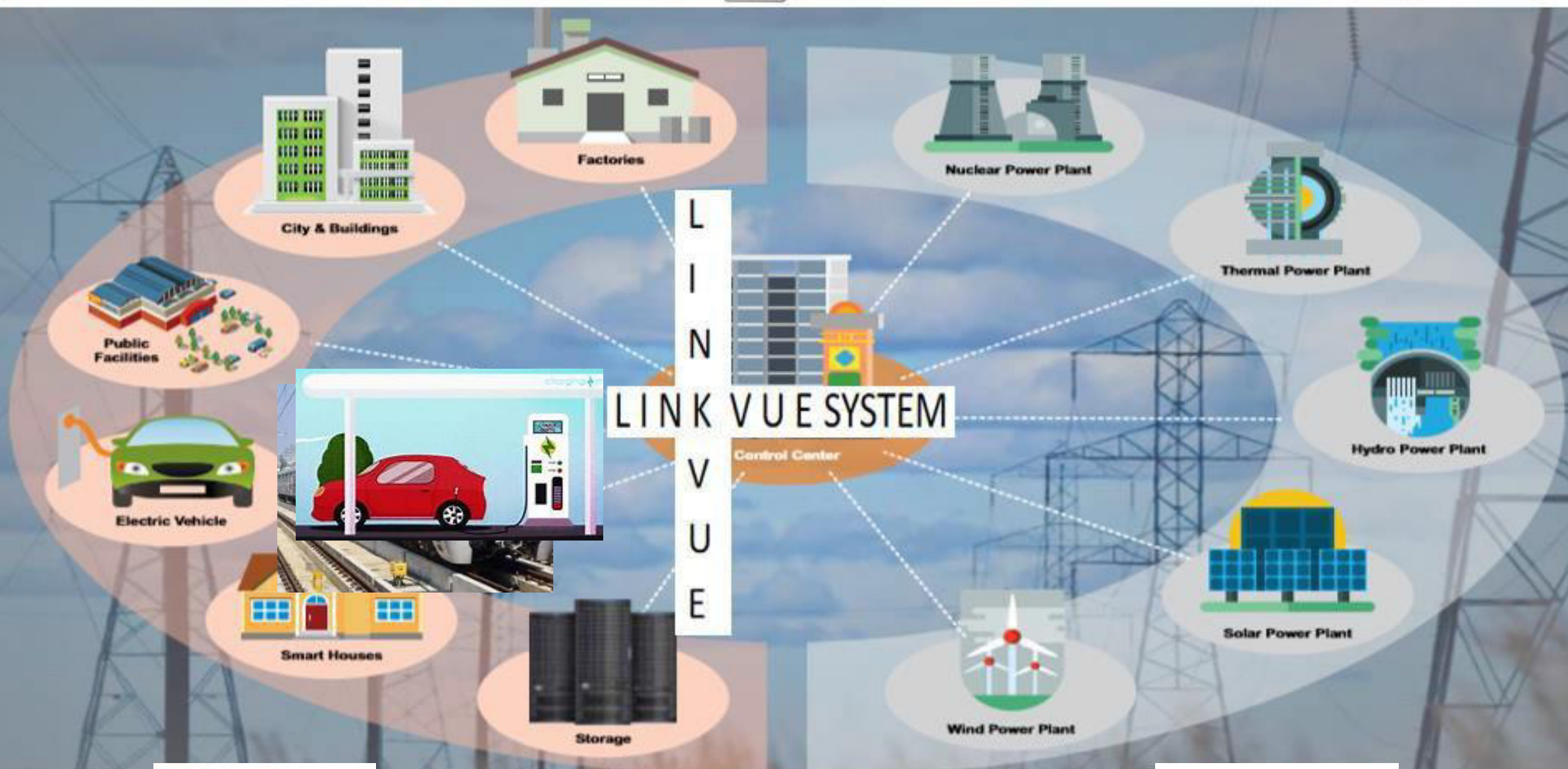
* Protection recommended at the point of use if distance is greater



SURGE PROTECTION SELECTION FOR POWER SYSTEM



Right Solution Partner for your Problems A Genuine Approach Latest Technologies Adoption



India

Australia



Link Vue System Pvt Ltd

Electrical Safety

Earthing, Lightning & Surge Protection

Net Working Product Supply & Installation

Ethernet SW, Fiber Optics & Wire Less

Automation Products

Data Logger, RTU's Digital & Analog I/O's

Protocol Converter, Media Converter,

Cables Connectors & LIU's

Perimeter Intrusion Detection System CCTV,

Fire Alarm, Access Controls & Security System

Cable & Connectors, Plug & Sockets for

Electrical Vehicles, Solar PV, Building Wiring

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Electrical Safety

- Maintenance Free Earthing
- **Surge Protection** for Power , Signal & Data Serial Port ,Communication Port

Electrical Connectors

- Electrical Freedom Wiring Connectors Hanging, Panel Mounted and Channel Mounted Shorting , One 2 One and Distribution
- High Voltage PLUG-Sockets Cable 2 Cable ,Panel 2 Cable , Wall 2 Cable Outdoor IP 68 16Amps-450 Amps

Solar PV Connectors

- Solar PV MC4 Connectors , MC 4 Cable Harness ,Y Link , with and Without Fuses 1800VDC 30Amps
- Solar DC Fuses and Fuse Holders

Electric Vehicle Connectors

- Electric Vehicle Charging Connectors GBT ,CCS, CHAdemo, CEE,SAE ,Tesla , Cable Harness for Male Vehicle Connectors and Female Gun Type PLUG

Electric Vehicle Protection Components

- RCD , RCBO EVSE Communication Products

Networking Products

- Ethernet SW Un Managed, Managed, Programmable
- Media Converter SM and MM Data Patch Cord, LIU's
- Communication Cables RS485, Modbus, Ethernet , FO , Profibus , Foundation Field Bus
- Communication Connectors Profibus , Modbus , Foundation Field Bus , ProfiNet

•Smart Intelligent Data Logger with Digital and Analogue I/O's

•Protocol Converter

- Master – Master
- Master- Slave
- Slave- Slave
- Profibus , Modbus RTU's Modbus TCP , CAN bus , ProfNet , Foundation Field Bus ,IEC61850 , Lon Works, Device Net BACnet
- Protocol to FO Converter

You are in Right Hand We are Right Partner For You
Genuine and Professional DEAL



Contact us India and Australia

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