1.Function

EBS2U Series Surge protector device(hereinafter referred to as SPD) is used for power supply systems such as IT, TT, TN-C, TN-S, TN-CS, etc. for low-voltage AC distribution systems, for indirect lightning and direct lightning or other A surge of transient overvoltage is protected. The SPD has a common mode(MC) and differential mode(MD) protection. The SPD complies with GB/T18802.1/IEC61643-II.

2.Nomenclature

EBS 2U - 60 / 1P

- 1P — Poles
- 60 — Max. release current
- 2U — Design code
- EBS — Company code

- Poles: 1P, 2P, 3P, 4P, 1P+N, 3P+N, 1P+NPE, 3P+NPE
- Max. Continuous operating a.c.voltage Voltage UC:140, 275, 320, 385, 420V
- SPD Type: T1, T2, T3
- Voltage protection level: Up 1.2, 1.5, 1.8, 2.0kV
- Maximum discharge current (8/20μs): Imax 10, 20, 40, 60, 80, 100kA
- Norminal discharge current (8/20μs): In 5, 10, 20, 30, 40, 50kA

3.Specifications

Standard		EBS2U-40	EBS2U-40 N-PE
According to IEC61643-11		Type 2	Type 2
Max. continous operation AC voltage	Uc	275V AC	255V AC
Norminal discharge current（8/20μs）	In	20kA	20kA
Maximum discharge current (8/20μs)	Imax	40kA	/
Peak current（10/350）	Ipeak	/	12.5kA
Voltage protection level (L-N)	Up	1.5kV	1.5kV
Response time (L-N)	tA	25ns	25ns
Environment temperature	Tu	-40°C~80°C	-40°C~80°C
Status indicator		Green / red	Green / red
Mounting		35mm Standard Guide	35mm DIN-rail
Cross section of wire (Min.)	mm²	4mm²	4mm²
Cross section of wire (Max.)	mm²	35mm²	35mm²
Casing material		Thermoplastic UL94-V0	Thermoplastic UL94-V0
Protection grade		IP20	IP20
Remote Signalling		Optional	Optional
Dimension (LxWxH)		90x70x18/36/54/72mm	90x70x18/36/54/72mm
Poles		1P, 2P, 3P, 4P, 1P+N, 3P+N, 1P+NPE, 3P+NPE	

Standard		EBS3U-40
According to IEC61643-11		Type 2
Max. continous operation AC voltage	Uc	275V AC
Norminal discharge current（8/20μs）	In	20kA
Maximum discharge current (8/20μs)	Imax	40kA
Voltage protection level (L-N)	Up	1.8kV
Response time (L-N)	tA	25ns
Environment temperature	Tu	-40°C~80°C
Status indicator		Green / red
Mounting		35mm DIN-rail
Cross section of wire (Min.)	mm²	4mm²
Cross section of wire (Max.)	mm²	35mm²
Casing material		Thermoplastic UL94-V0
Protection grade		IP20
Remote Signalling		Optional
Dimension (LxWxH)		90x70x18/36/54/72mm
Poles		1P, 2P, 3P, 4P, 1P+N, 3P+N, 1P+NPE, 3P+NPE

Standard		EBS6U
According to IEC61643-11		T2
Max. continous operation AC voltage	Uc	275V AC(Can be customized)
Norminal discharge current（8/20μs）	In	20kA
Maximum discharge current (8/20μs)	Imax	40kA
Peak current（10/350）	Ipeak	/
Voltage protection level (L-N)	Up	1.5kV
Response time (L-N)	tA	25ns
Environment temperature	Tu	-40°C~80°C
Status indicator		Green / red
Mounting		35mm DIN-rail
Cross section of wire (Min.)	mm²	2.5mm²
Cross section of wire (Max.)	mm²	35mm²
Casing material		Thermoplastic UL94-V0
Protection grade		IP20
Remote Signalling		Optional
Poles		1P, 2P, 3P, 4P, 1P+N, 3P+N, 1P+NPE, 3P+NPE

Standard		EBS7U
According to IEC61643-11		Type 2
Max. continous operation AC voltage	Uc	275V AC
Norminal discharge current（8/20μs）	In	20kA
Maximum discharge current (8/20μs)	Imax	40kA
Voltage protection level (L-N)	Up	1.5kV
Response time (L-N)	tA	25ns
Environment temperature	Tu	-40°C~80°C
Status indicator		Green / red
Mounting		35mm DIN-rail
Cross section of wire (Min.)	mm²	4mm²
Cross section of wire (Max.)	mm²	35mm²
Casing material		Thermoplastic UL94-V0
Protection grade		IP20
Remote Signalling		Optional
Poles		1P, 2P, 3P, 4P, 1P+N, 3P+N, 1P+NPE, 3P+NPE

4.Main Structure and Working Principle

In a three-phase four-wire system, protectors are connected between three phase lines and a zero line to the ground (Figure 1). Under normal circumstances, the protector is in a high resistance state. When surge overvoltage occurs in the power grid due to lightning or other reasons, the protector is turned on quickly in nanosecond time, and the surge overvoltage is introduced into the earth, thus protecting the electrical equipment on the power grid. When the surge voltage passes through the protector and disappears, the protector returns to the high resistance state again, thus not affecting the normal operation of the power grid. The electrical principle of surge protector is shown in Figure 2.

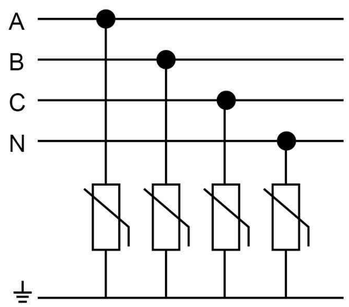


Figure 1 380V network

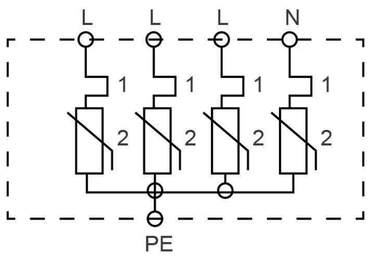


Figure 2 Note: 1.Thermal failure release
2.Varistor

5.Installation and Maintenance

- The protector is connected by copper wire, with a cross-sectional area of: Soft wire: 2.5-16mm² Hard wire: 2.5-25mm².
- The grounding wire shall be applied with double-color wires over 4mm².
- In order to prevent the surge protector from being damaged due to various factors or burned out due to transient overvoltage, each SPD must be protected by fuse or circuit breaker (MCB), and the breaking capacity of the circuit breaker must be greater than the short-circuit current at that place. The characteristic curve is C curve, and it can withstand the impact of SPD surge current without action or damage.
- See Figure 3, Figure 4, Figure 5 and Figure 6 for wiring diagram of low voltage system.
  Wiring diagram of low voltage system.
- After the protector is installed as required, it can automatically protect the Internet without adjustment.
- During the operation, it is necessary to regularly check whether the module signs are red, observe whether the fuse signs are red, and replace the failed components in time.

a)TN-C System

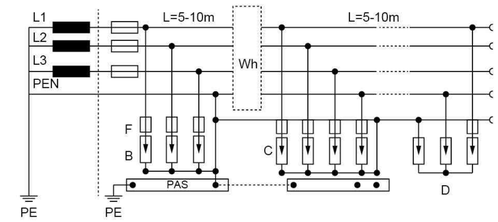


Figure 3

b)TN-S System

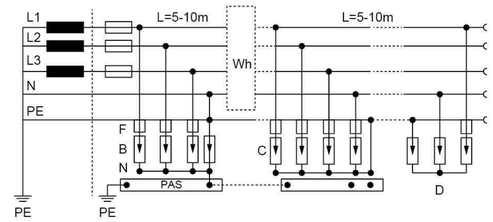


Figure 4

c)TT System

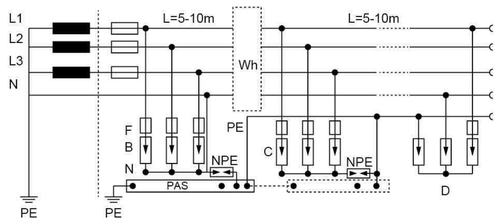


Figure 5

d)IT System

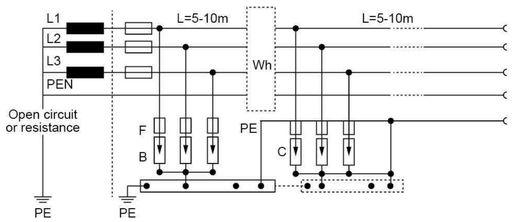
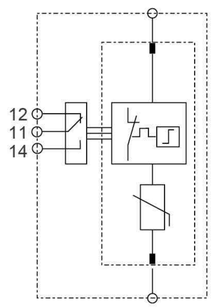
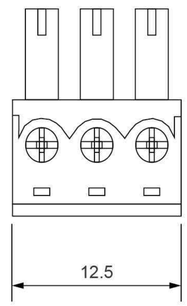
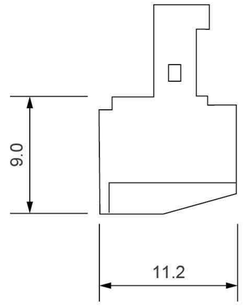


Figure 6







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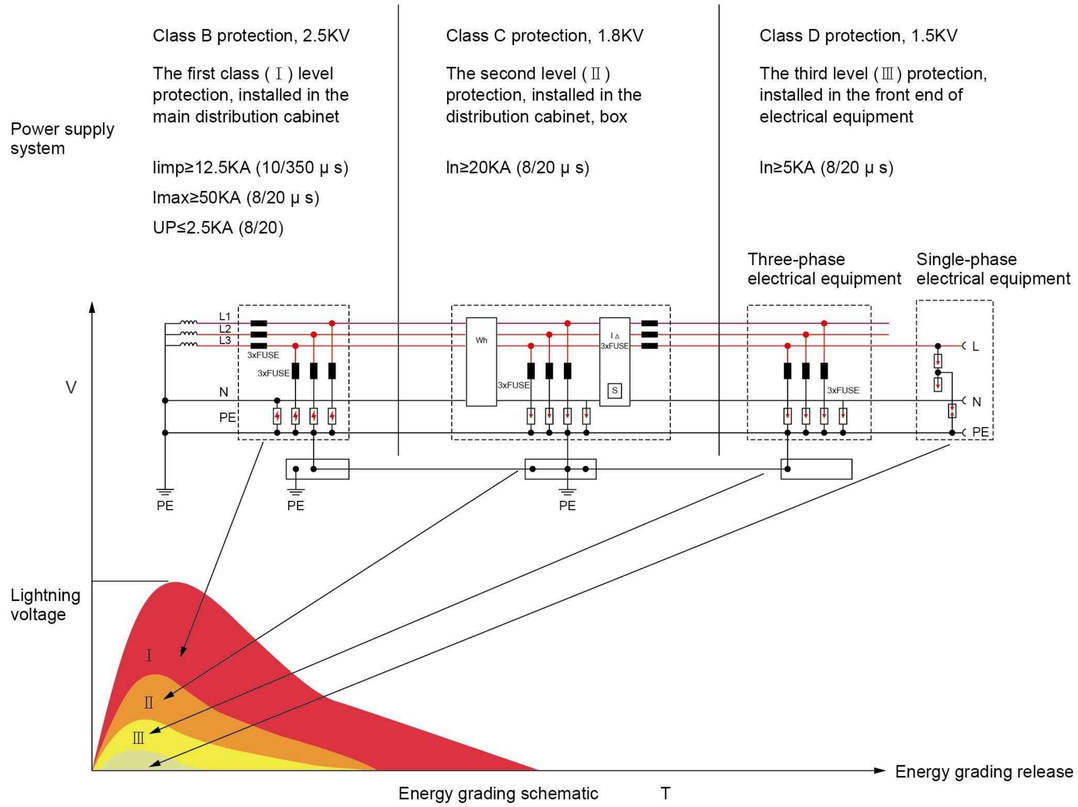
6.Application Schematic Selection of Surge Protective Device



7.Order Note

Following items should be marked when ordering	Ordering sample
Product name, model&Poles Protection level Max.release current Max. continuous working voltage Quantity	To order the EBS2U surge protector, Imax=60kA In=10kA, protection level is C, 1 poles, Uc=140 and quantity is 100 pieces, should be marked: EBS2U-60/C10/1P/140, 100PCS.