

# Surge Protective Device

## BK Series

### DC Din-rail type

## Product description

The BK Series DC/DIN type surge protect protects a DC electric system from surge voltages. Also, the system allows replacement of the protective element (MOV), ensuring convenience and economy. However, as only the protective module is provided, other components should be added when the system is installed in accordance with the site condition. When the protective device is in a normal condition, the indication display will be green. The display will turn black when the protective device is activated (for an anomaly or an accident.)



## Product rating

| Item   | DC Type                  |                          |                 |                 |   |
|--|--------------------------|--------------------------|-----------------|-----------------|---|
|  | BK20S-DC110              | BK20S-DC600              | BK20S-DC1000    | BK20S-DC1500    |   |
| No. of poles                                 | [Pole] 2P                | 3P                       |                 |                 |   |
| Rated voltages                               | Un [V] DC110             | DC600                    | DC1000          | DC1500          |   |
| Max. continued-operation voltage             | Uc [V] DC220             | DC700                    | DC1200          | DC1500          |   |
| Voltage protection level                     | Up [kV] ≤1.0             | ≤2.5                     | ≤3.9            | ≤4.5            |   |
| Nominal discharge current                    | In [kA] 20               | 20                       | 20              | 20              |   |
| Max. discharge current                       | I <sub>max</sub> [kA] 40 | 40                       | 40              | 40              |   |
| Impulse current                              | I <sub>imp</sub> [kA] -  | -                        | -               | -               |   |
| Grades                                       | Test Class               | Class II                 |                 |                 |   |
| Reaction time                                |                          | < 25ns                   |                 |                 |   |
| Status indication                            |                          | Have Status indication   |                 |                 |   |
| Operating temperature range                  |                          | -40°C~80°C               |                 |                 |   |
| Cross-sectional area of the connecting wires |                          | 6mm <sup>2</sup> or more |                 |                 |   |
| Accessories                                  |                          | AL <sup>Note1)</sup>     |                 |                 |   |
| Standard                                     |                          | IEC 61643-11 / UL1449    |                 |                 |   |
| Certification                                |                          | CE                       | CE, UL          | CE, UL          | CE                                      |
| SPD Disconnecter                             | MCCB                     | TD100 2P 32A             | TD100 3P 32A    | TD100 4P 32A    | TSD250N/H 4P 63A<br>(Under development) |
|  | MCB                      | BK63H-DC 2P 40A          | BK63H-DC 3P 40A | BK63H-DC 4P 40A | -                                       |

Note) 1. The AL contact accessories are not sole separately.  
 You need to choose these accessories when you place your order for the product.  
 Please be mindful of this fact when you place your order.



# SD Series

## SPD Disconnecter

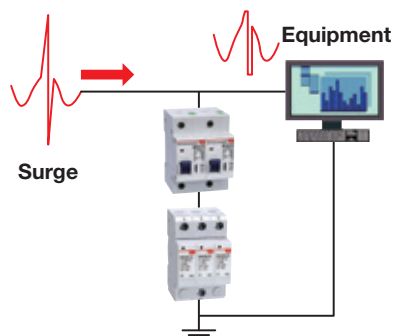
### Product description

SPD Disconnecter is a device that separates the SPD from the system during SPD failure and maintenance work. It has a trip function that can detect and cut off leakage current caused by SPD deterioration (varistor burnout, etc.) and has a high surge resistance to prevent the unintended trip operation of the Disconnecter.



### Product rating

| Item                        | SD10-T2                   | SD20-T2  | SD30-T2 | SD40-T2 | SD13-T1 |
|-----------------------------|---------------------------|----------|---------|---------|---------|
| No. of poles                | 1, 2, 3, 4P               |          |         |         |         |
| Rated voltages              | Ue [V] 230/400V           |          |         |         |         |
| Rated insulation voltage    | Ui [V] 500V               |          |         |         |         |
| Voltage protection level    | Up [kV] 0.25kV            | 0.4kV    | 0.5kV   | 0.7kV   | 0.3kV   |
| Nominal discharge current   | In [kA] 10kA              | 20kA     | 30kA    | 40kA    | -       |
| Max. discharge current      | Imax [kA] 20kA            | 40kA     | 60kA    | 80kA    | -       |
| Impulse current             | Iimp [kA] -               | -        | -       | -       | 12.5kA  |
| Grades                      | Test Class Class II, III  | Class II |         |         | Class I |
| Short circuit current       | Isc [kA] 25kA             |          |         |         |         |
| Frequency                   | 50/60Hz                   |          |         |         |         |
| Min. delay current          | It 3A (<10s)              |          |         |         |         |
| Min. instantaneous current  | Ii 5A (>0.1s), 10A(<0.1s) |          |         |         |         |
| Protection degree           | IP20                      |          |         |         |         |
| Max. connection wire range  | 25mm <sup>2</sup>         |          |         |         |         |
| AL connection wire range    | 1.5mm <sup>2</sup>        |          |         |         |         |
| Operating temperature range | -25°C~60°C                |          |         |         |         |
| Ambient humidity            | 20%~90%                   |          |         |         |         |
| Din-Rail                    | EN60715 (35mm)            |          |         |         |         |



- Convenient SPD replacement
- High surge resistance
- Leakage current detection
- Prevent malfunctions in case of short circuit
- Easy installation using DIN rail

\* AL available for SD20-T2 and SD-40T2

# Surge Protective Device

## SP Series

### Box type

## Product description

The SP series surge protective device is applied to the alternating current 50/60Hz, 220V/380V power system and provides the protection from the surge overvoltage of an electric system. Moreover, the protection module, disconnectable device (fuse), and fastened power and ground wires are organized into the all-in-one steel cabinet with convenient installation and stability.

If the protective device is normal, the display becomes green. The display becomes red after operation (abnormal or after an accident).



## Product rating

### - Single phase 2W+G (SPL)

| SPD Type  | SPL (AC 110/220V)  |  | SPL (AC 220V) |          |
|---|--|--|---------------|----------|
|   | SPL3-20S   |  | SPL2-40S      | SPL2-80S |
| Class   | Class III  |  | Class II      |          |
| Rated system [Pole]   | 2W+G   |  | 2W+G          |          |
| Rated voltage, Un AC [V]  | 110, 220   |  | 220           |          |
| Max. continuous operating voltage, Uc AC [V]                              | 275  |  | 385           |          |
| Voltage protection level, Up [kV]   | 1.5  |  | 2.5           | 3.0      |
| Operation voltage, Uoc [kV/kA]  | 20/10  |  | 20            | 40       |
| Nominal discharge current, In (8/20 $\mu$ s) [kA, per mode]               | -  |  | 40            | 80       |
| Maximum discharge current, I <sub>max</sub> (8/20 $\mu$ s) [kA, per mode] | -  |  | -             | -        |
| Response time, tA [ns]  | < 5 ns   |  | < 5 ns        |          |
| Operating temperature range [°C]  | -40 ~ +70°C  |  | -40 ~ +70°C   |          |
| Operating frequency [Hz]  | 50/60 Hz   |  | 50/60 Hz      |          |
| Mounting on   | Screw  |  | Screw         |          |
| Operation status indication   | Normal operation: Green, Abnormal/After an accident: Red |  |               |          |
| Protection degree   | IP20   |  | IP20          |          |
| Protection mode   | L-N, N-PE (G), L-PE (G)                                  |  | L-N, N-PE (G) |          |
| Ground  | TN   |  | TN            |          |
| Certification   | CE   |  | KS, CE        |          |



## Product rating

### - Three phase 3W+G (SPT) AC 220V

| SPD Type  | SPT (AC 220V)  |          |                   |           |
|---|--|----------|-------------------|-----------|
|   | SPT2-40S   | SPT2-80S | SPT1-120S         | SPT1-160S |
| Class   | Class II   |          | Class I, Class II |           |
| Rated system [Pole]   | 3W+G   |          |                   |           |
| Rated voltage, Un AC [V]  | 220  |          |                   |           |
| Max. continuous operating voltage, Uc AC [V]                                | 385  |          |                   |           |
| Voltage protection level, Up [kV]   | 2.5  | 3.0      | 2.0               | 2.0       |
| Nominal discharge current, In (8/20 $\mu$ s) [kA, per mode]                 | 20   | 40       | -                 | -         |
| Maximum discharge current, I <sub>max</sub> (8/20 $\mu$ s) [kA, per mode]   | 40   | 80       | 120               | 160       |
| Lightning impulse current, I <sub>imp</sub> (10/350 $\mu$ s) [kA, per mode] | -  | -        | 6.5               | 6.5       |
| Response time, tA [ns]  | < 5 ns   |          |                   |           |
| Operating temperature range [°C]  | -40 ~ +70°C  |          |                   |           |
| Operating frequency [Hz]  | 50/60 Hz   |          |                   |           |
| Mounting on   | Screw  |          |                   |           |
| Operation status indication   | Normal operation: Green, Abnormal/After an accident: Red |          |                   |           |
| Protection degree   | IP20   |          |                   |           |
| Protection mode   | L-PE (G)   |          |                   |           |
| Ground  | TN   |          |                   |           |
| Certification   | KS, CE   |          |                   |           |

\* SPT can not be used in Delta wiring grounding system

## Product rating

### - Three phase 3W+G (SPT) AC 380V



| SPD Type  | SPT (AC 380V)  |          |                   |           |
|---|--|----------|-------------------|-----------|
|   | SPT2-40S   | SPT2-80S | SPT1-120S         | SPT1-160S |
| Class   | Class II   |          | Class I, Class II |           |
| Rated system [Pole]   | 3W+G   |          |                   |           |
| Rated voltage, Un AC [V]  | 380  |          |                   |           |
| Max. continuous operating voltage, Uc AC [V]                                | 385  |          |                   |           |
| Voltage protection level, Up [kV]   | 2.5  | 3.0      | 2.0               | 2.0       |
| Nominal discharge current, In (8/20 $\mu$ s) [kA, per mode]                 | 20   | 40       | -                 | -         |
| Maximum discharge current, I <sub>max</sub> (8/20 $\mu$ s) [kA, per mode]   | 40   | 80       | 120               | 160       |
| Lightning impulse current, I <sub>imp</sub> (10/350 $\mu$ s) [kA, per mode] | -  | -        | 6.5               | 6.5       |
| Response time, tA [ns]  | < 5 ns   |          |                   |           |
| Operating temperature range [°C]  | -40 ~ +70°C  |          |                   |           |
| Operating frequency [Hz]  | 50/60 Hz   |          |                   |           |
| Mounting on   | Screw  |          |                   |           |
| Operation status indication   | Normal operation: Green, Abnormal/After an accident: Red |          |                   |           |
| Protection degree   | IP20   |          |                   |           |
| Protection mode   | L-PE (G)   |          |                   |           |
| Ground  | TN   |          |                   |           |
| Certification   | KS, CE   |          |                   |           |

\* SPT can not be used in Delta wiring grounding system

## Product rating

### - Three phase 3W+G (SPT) AC 440V



| SPD Type  | SPT (AC 440V)  |          |                   |           |
|---|--|----------|-------------------|-----------|
|   | SPT2-40S   | SPT2-80S | SPT1-120S         | SPT1-160S |
| Class   | Class II   |          | Class I, Class II |           |
| Rated system [Pole]   | 3W+G   |          |                   |           |
| Rated voltage, Un AC [V]  | 440  |          |                   |           |
| Max. continuous operating voltage, Uc AC [V]                                | 385  |          |                   |           |
| Voltage protection level, Up [kV]   | 2.5  | 3.0      | 2.0               | 2.0       |
| Nominal discharge current, In (8/20 $\mu$ s) [kA, per mode]                 | 20   | 40       | -                 | -         |
| Maximum discharge current, I <sub>max</sub> (8/20 $\mu$ s) [kA, per mode]   | 40   | 80       | 120               | 160       |
| Lightning impulse current, I <sub>imp</sub> (10/350 $\mu$ s) [kA, per mode] | -  | -        | 6.5               | 6.5       |
| Response time, tA [ns]  | < 5 ns   |          |                   |           |
| Operating temperature range [°C]  | -40 ~ +70°C  |          |                   |           |
| Operating frequency [Hz]  | 50/60 Hz   |          |                   |           |
| Mounting on   | Screw  |          |                   |           |
| Operation status indication   | Normal operation: Green, Abnormal/After an accident: Red |          |                   |           |
| Protection degree   | IP20   |          |                   |           |
| Protection mode   | L-PE (G)   |          |                   |           |
| Ground  | TN   |          |                   |           |
| Certification   | KS, CE   |          |                   |           |

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# Surge Protective Device

## SP Series

### Box type

## Product rating

### - Three phase 4W +G (SPY) 127S



| SPD Type   | SPY (AC 127/220V)  |          |                   |           |             |
|--|--|----------|-------------------|-----------|-------------|
|  | SPY2-40S   | SPY2-80S | SPY1-120S         | SPY1-160S | SPY1-200S * |
| Class  | Class II   |          | Class I, Class II |           |             |
| Rated system   | [Pole] 4W+G  |          |                   |           |             |
| Rated voltage, Un  | AC [V] 127/220   |          |                   |           |             |
| Max. continuous operating voltage, Uc                        | AC [V] 385   |          |                   |           |             |
| Voltage protection level, Up                                 | 2.5  | 3.0      | 2.0               | 2.0       | 2.0         |
| Nominal discharge current, In (8/20 $\mu$ s)                 | 20   | 40       | -                 | -         | -           |
| Maximum discharge current, I <sub>max</sub> (8/20 $\mu$ s)   | 40   | 80       | 120               | 160       | 200         |
| Lightning impulse current, I <sub>imp</sub> (10/350 $\mu$ s) | -  | -        | 6.5               | 6.5       | 12.5        |
| Response time, tA  | [ns] < 5 ns  |          |                   |           |             |
| Operating temperature range                                  | [°C] -40 ~ +70°C   |          |                   |           |             |
| Operating frequency  | [Hz] 50/60 Hz  |          |                   |           |             |
| Mounting on  | Screw  |          |                   |           |             |
| Operation status indication                                  | Normal operation: Green, Abnormal/After an accident: Red |          |                   |           |             |
| Protection degree  | IP20   |          |                   |           |             |
| Protection mode  | L-N, N-PE (G)  |          |                   |           |             |
| Ground   | TN   |          |                   |           |             |
| Certification  | KS, CE   |          |                   |           |             |

\* The wiring direction of SPY1-200S is located on the side. (Refer to external dimension)

## Product rating

### - Three phase 4W+G (SPY) 220S



| SPD Type   | SPY (AC 220/380V)  |          |                   |           |             |
|--|--|----------|-------------------|-----------|-------------|
|  | SPY2-40S   | SPY2-80S | SPY1-120S         | SPY1-160S | SPY1-200S * |
| Class  | Class II   |          | Class I, Class II |           |             |
| Rated system   | [Pole] 4W+G  |          |                   |           |             |
| Rated voltage, Un  | AC [V] 220/380   |          |                   |           |             |
| Max. continuous operating voltage, Uc                        | AC [V] 385   |          |                   |           |             |
| Voltage protection level, Up                                 | 2.5  | 3.0      | 2.0               | 2.0       | 2.0         |
| Nominal discharge current, In (8/20 $\mu$ s)                 | 20   | 40       | -                 | -         | -           |
| Maximum discharge current, I <sub>max</sub> (8/20 $\mu$ s)   | 40   | 80       | 120               | 160       | 200         |
| Lightning impulse current, I <sub>imp</sub> (10/350 $\mu$ s) | -  | -        | 6.5               | 6.5       | 12.5        |
| Response time, tA  | [ns] < 5 ns  |          |                   |           |             |
| Operating temperature range                                  | [°C] -40 ~ +70°C   |          |                   |           |             |
| Operating frequency  | [Hz] 50/60 Hz  |          |                   |           |             |
| Mounting on  | Screw  |          |                   |           |             |
| Operation status indication                                  | Normal operation: Green, Abnormal/After an accident: Red |          |                   |           |             |
| Protection degree  | IP20   |          |                   |           |             |
| Protection mode  | L-N, N-PE (G)  |          |                   |           |             |
| Ground   | TN   |          |                   |           |             |
| Certification  | KS, CE   |          |                   |           |             |

\* The wiring direction of SPY1-200S is located on the side. (Refer to external dimension)

## Product rating

### - limp 12.5kA Class I SPD



| SPD Type  | SPL1-13/50S  | SPT1-13S              | SPY1-13/50S           |
|---|--|-----------------------|-----------------------|
| Class   | Class I  |                       |                       |
| Rated system [Pole]   | 2W+G   | 3W+G                  | 4W+G                  |
| Rated voltage, Un AC [V]  | 220  | 380                   | 380/220               |
| Max. continuous operating voltage, Uc AC [V]                                | 320  |                       |                       |
| Voltage protection level, Up [kV]   | L-N : 1.2, N-PE : 1.8                                    | L-N : 1.2, N-PE : 1.8 | L-N : 1.2, N-PE : 1.8 |
| Nominal discharge current, In (8/20 $\mu$ s) [kA, per mode]                 | -  | -                     | -                     |
| Maximum discharge current, I <sub>max</sub> (8/20 $\mu$ s) [kA, per mode]   | -  | -                     | -                     |
| Lightning impulse current, I <sub>imp</sub> (10/350 $\mu$ s) [kA, per mode] | 12.5/50  | 12.5                  | 12.5/50               |
| Response time, t <sub>A</sub> [ns]  | < 5 ns   |                       |                       |
| Operating temperature range [°C]  | -40 ~ +70°C  |                       |                       |
| Operating frequency [Hz]  | 50/60 Hz   |                       |                       |
| Mounting on   | Screw  |                       |                       |
| Operation status indication   | Normal operation: Green, Abnormal/After an accident: Red |                       |                       |
| Protection degree   | IP20   |                       |                       |
| Protection mode   | L-N, N-PE (G)  | L-PE (G)              | L-N, N-PE (G)         |
| Ground  | TN/TT/IT   |                       |                       |
| Certification   | KS, CE   |                       |                       |

\* SPT can not be used in Delta wiring grounding system

## Product rating

### - limp 25kA Class I SPD



| SPD Type  | SPL1-25/50S  | SPT1-25S              | SPY1-25/100S          |
|---|--|-----------------------|-----------------------|
| Class   | Class I  |                       |                       |
| Rated system [Pole]   | 2W+G   | 3W+G                  | 4W+G                  |
| Rated voltage, Un AC [V]  | 220  | 380                   | 380/220               |
| Max. continuous operating voltage, Uc AC [V]                                | 320  |                       |                       |
| Voltage protection level, Up [kV]   | L-N : 1.3, N-PE : 2.0                                    | L-N : 1.3, N-PE : 2.0 | L-N : 1.3, N-PE : 2.0 |
| Nominal discharge current, In (8/20 $\mu$ s) [kA, per mode]                 | -  | -                     | -                     |
| Maximum discharge current, I <sub>max</sub> (8/20 $\mu$ s) [kA, per mode]   | -  | -                     | -                     |
| Lightning impulse current, I <sub>imp</sub> (10/350 $\mu$ s) [kA, per mode] | 25/50  | 25                    | 25/100                |
| Response time, t <sub>A</sub> [ns]  | < 5 ns   |                       |                       |
| Operating temperature range [°C]  | -40 ~ +70°C  |                       |                       |
| Operating frequency [Hz]  | 50/60 Hz   |                       |                       |
| Mounting on   | Screw  |                       |                       |
| Operation status indication   | Normal operation: Green, Abnormal/After an accident: Red |                       |                       |
| Protection degree   | IP20   |                       |                       |
| Protection mode   | N-PE (G)   | L-PE (G)              | L-N, N-PE (G)         |
| Ground  | TN/TT/IT   |                       |                       |
| Certification   | KS, CE   |                       |                       |

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