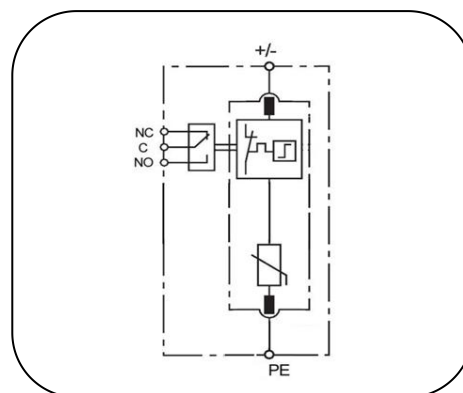
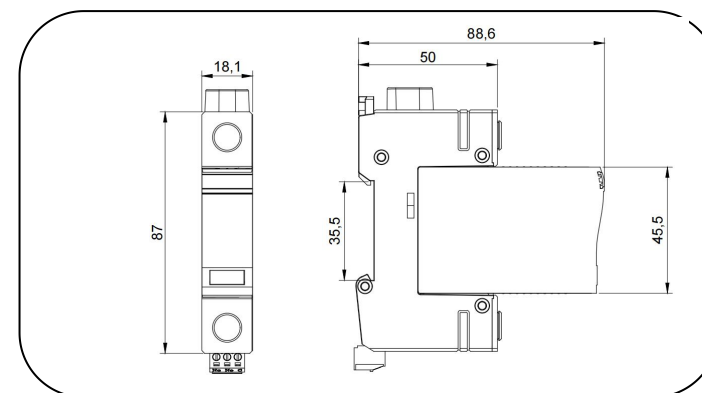


**Class I + Class II (T1+T2), PV DC Surge Arresters**
**PVB12.5/...V**


Basic circuit diagram



Dimension drawing

The PVB12.5 V is class I & class II (or T1+T2 ) single pole PV DC SPD designed for DC application such as PV/ Photovoltaic system dc-side protection, especially for location of high risk exposure or LPZ 0-2 building entrances ( IEC 62305-4) to against the damage from direct or close lightning strikes.

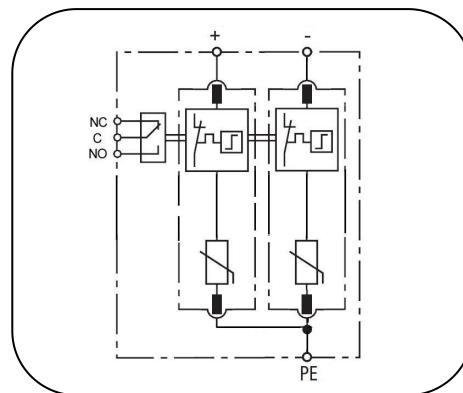
With built in PROSURGE high energy MOV, PVB12.5 V ensures remarkable lightning current discharge capacity up to 12.5kA 10/350 $\mu$ s and high reliability. The unique design of thermal protection provides quick thermal response and secure disconnection.

- TUV certified T1+ T2 PV DC SPD per IEC/EN 61643-31 standard.
- 18mm narrow model design, Single pole SPD for multi-purpose surge protection
- Application in Photovoltaic (PV) systems and other DC power system like charging system for electric vehicles etc.
- Unique thermal disconnecter design
- Lightning current capacity up to 12.5kA 10/350 $\mu$ s
- Surge current capability up to 80kA 8/20 $\mu$ s
- Low voltage protection level
- Degradation failure indication and optional remote signal contact.
- Pluggable module for easy replacement without the need to remove system wiring.
- Wide operating temperature -40° C ~85° C
- 35mm DIN-rail mounting
- Comply with EN 50539-11,UL1449 5<sup>th</sup>, IEEE C62.41,CSA C22.2 standards

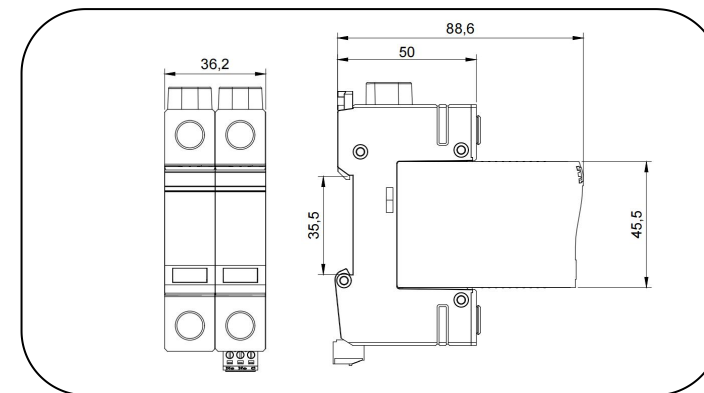
# POWER SUPPLY SYSTEM

## Technical data

| Part No.   | PVB12.5/48-V (-S)  | PVB12.5/75-V (-S) | PVB12.5/100-V(-S) | PVB12.5/150-V(-S) | PVB12.5/200-V(-S) | PVB12.5/300-V(-S) | PVB12.5/400-V(-S) | PVB12.5/500-V(-S) | PVB12.5/600-V(-S) | PVB12.5/750-V(-S) |
|--|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| In accordance with                               | IEC/EN 61643-31; UL1449 5 <sup>th</sup> ; EN 50539-11            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Category IEC/EU/VDE                              | I+ II /1+2/ B+C  |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| DC+ to DC- or DC+/- to PE                        | DC+ to DC- or DC+/- to PE  |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Nominal Voltage (DC) $U_n$                       | 48V  | 75V               | 100V              | 150V              | 200V              | 300V              | 400V              | 500V              | 600V              | 750V              |
| Max. continuous operating voltage (DC) $U_{cpv}$ | 55V  | 100V              | 125V              | 170V              | 225V              | 350V              | 460V              | 560V              | 670V              | 800V              |
| Nominal discharge current (8/20) $I_n$           | 25kA   | 25kA              | 25kA              | 25kA              | 25kA              | 25kA              | 25kA              | 25kA              | 25kA              | 25kA              |
| Max. discharge current (8/20) $I_{max}$          | 80kA   | 80kA              | 80kA              | 80kA              | 80kA              | 80kA              | 80kA              | 80kA              | 80kA              | 65kA              |
| Lightning impulse current (10/350) $I_{imp}$     | 12.5kA   | 12.5kA            | 12.5kA            | 12.5kA            | 12.5kA            | 12.5kA            | 12.5kA            | 12.5kA            | 12.5kA            | 8kA               |
| Voltage protection level $U_p$                   | 0.6kV  | 0.7kV             | 0.7kV             | 0.8kV             | 1.0kV             | 1.4kV             | 1.6kV             | 1.8kV             | 2.2kV             | 2.5kV             |
| Response time $t_A$                              | ≤25ns  |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Leakage Current $I_{pe}$                         | <0.1mA   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Short-circuit Current $I_{scpv}$                 | 1000A  |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Operating temperature range                      | - 40°C ~ + 85°C  |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Altitude   | -500m ~ +4000m   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cross-section of connection wire (max)           | Single-strand 35mm <sup>2</sup> ; multi-strand 25mm <sup>2</sup> |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Mounting   | 35mm DIN-rail in accordance with EN 50022/DIN46277-3             |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Enclosure material                               | thermoplastic; extinguishing degree UL94 V-0                     |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Degree of protection                             | IP20   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Installation width                               | 1 modules, DIN 43880   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Thermal disconnecter                             | Internal Green – normal ; red - failure                          |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Remote alarm contact                             | Optional   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Approvals, Certifications                        | TUV, CE  |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Additional data for Remote Alarm Contacts        |  |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Remote alarm contact type                        | Isolated Form C  |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Switching capability $U_n/I_n$                   | AC: 250V/0.5A DC: 250V/0.1A; 125V/0.2A; 75V/0.5A                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cross-section of remote signaling wire           | Max. 1.5mm <sup>2</sup> (or # 16AWG)                             |                   |                   |                   |                   |                   |                   |                   |                   |                   |

**Class I + Class II (T1+T2), PV DC Surge Arresters**
**PVB12.5/...-V-C**


Basic circuit diagram



Dimension drawing

The PVB12.5 C is class I & class II (or T1+T2 ) prewired PV DC SPD designed for DC application such as PV/ Photovoltaic system dc-side protection, especially for location of high risk exposure or LPZ 0-2 building entrances ( IEC 62305-4) to against the damage from direct or close lightning strikes.

With built in PROSURGE high energy MOV, PVB12.5V C ensures remarkable lightning current discharge capacity up to 12.5kA 10/350 $\mu$ s and high reliability. The unique design of thermal protection provides quick thermal response and secure disconnection.

- TUV certified T1+ T2 PV DC SPD per IEC/EN 61643-31 standard.
- 18mm narrow model design, prewired two poles of V circuit for common mode protection
- Application in Photovoltaic (PV) systems and other DC power system like charging system for electric vehicles etc.
- Unique thermal disconnecter design
- Lightning current capacity up to 12.5kA 10/350 $\mu$ s
- Surge current capability up to 80kA 8/20 $\mu$ s
- Low voltage protection level
- Degradation failure indication and optional remote signal contact.
- Pluggable module for easy replacement without the need to remove system wiring.
- Wide operating temperature -40° C ~85° C
- 35mm DIN-rail mounting
- Comply with EN 50539-11,UL1449 5<sup>th</sup>, IEEE C62.41,CSA C22.2 standards

# POWER SUPPLY SYSTEM

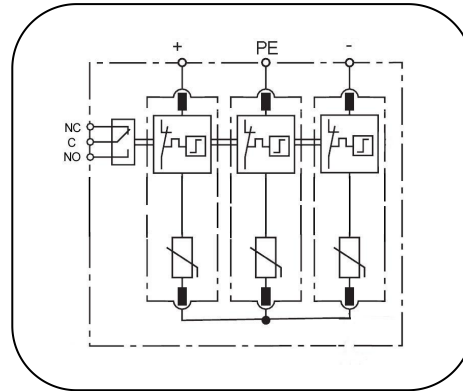
## Technical data

| Part No.   | PVB12.5/48-V-C (-S)  | PVB12.5/75-V-C (-S) | PVB12.5/100-V-C (-S) | PVB12.5/150-V-C (-S) | PVB12.5/200-V-C (-S)               | PVB12.5/300-V-C (-S) | PVB12.5/400-V-C (-S) | PVB12.5/500-V-C (-S) | PVB12.5/600-V-C (-S) |
|--|--|---------------------|----------------------|----------------------|------------------------------------|----------------------|----------------------|----------------------|----------------------|
| In accordance with                               | IEC/EN 61643-31; UL1449 5 <sup>th</sup> ; EN 50539-11            |                     |                      |                      |                                    |                      |                      |                      |                      |
| Category IEC/EU/VDE                              | I+ II /1+2/ B+C  |                     |                      |                      |                                    |                      |                      |                      |                      |
| Protection mode                                  | DC+ to DC- , DC+/- to PE   |                     |                      |                      |                                    |                      |                      |                      |                      |
| Nominal Voltage (DC) $U_n$                       | 48V  | 75V                 | 100V                 | 150V                 | 200V                               | 300V                 | 400V                 | 500V                 | 600V                 |
| Max. continuous operating voltage (DC) $U_{cpv}$ | 55V  | 100V                | 125V                 | 170V                 | 225V                               | 350V                 | 460V                 | 560V                 | 670V                 |
| Nominal discharge current (8/20) $I_n$           | 25kA   | 25kA                | 25kA                 | 25kA                 | 25kA                               | 25kA                 | 25kA                 | 25kA                 | 25kA                 |
| Max. discharge current (8/20) $I_{max}$          | 80kA   | 80kA                | 80kA                 | 80kA                 | 80kA                               | 80kA                 | 80kA                 | 80kA                 | 80kA                 |
| Lightning impulse current (10/350) $I_{imp}$     | 12.5kA   | 12.5kA              | 12.5kA               | 12.5kA               | 12.5kA                             | 12.5kA               | 12.5kA               | 12.5kA               | 12.5kA               |
| Voltage protection level<br>$U_p$                | DC+/- to PE<br>0.6 kV  | 0.7kV               | 0.7kV                | 0.8kV                | 1.0kV                              | 1.4kV                | 1.6kV                | 1.8kV                | 2.2kV                |
|  | DC + to DC -<br>1.0kV  | 1.2kV               | 1.2kV                | 1.5kV                | 2.0kV                              | 2.5kV                | 3.0kV                | 3.5kV                | 4.0kV                |
| Response time $t_A$                              | ≤25ns  |                     |                      |                      |                                    |                      |                      |                      |                      |
| Leakage Current $I_{pe}$                         | <0.1mA   |                     |                      |                      |                                    |                      |                      |                      |                      |
| Short-circuit Current $I_{scpv}$                 | 1000A  |                     |                      |                      |                                    |                      |                      |                      |                      |
| Operating temperature range                      | - 40°C ~ + 85°C  |                     |                      |                      |                                    |                      |                      |                      |                      |
| Altitude   | -500m ~ +4000m   |                     |                      |                      |                                    |                      |                      |                      |                      |
| Cross-section of connection wire (max)           | Single-strand 35mm <sup>2</sup> ; multi-strand 25mm <sup>2</sup> |                     |                      |                      |                                    |                      |                      |                      |                      |
| Mounting   | 35mm DIN-rail in accordance with EN 50022/DIN46277-3             |                     |                      |                      |                                    |                      |                      |                      |                      |
| Enclosure material                               | thermoplastic; extinguishing degree UL94 V-0                     |                     |                      |                      |                                    |                      |                      |                      |                      |
| Degree of protection                             | IP20   |                     |                      |                      |                                    |                      |                      |                      |                      |
| Installation width                               | 2 modules, DIN 43880   |                     |                      |                      |                                    |                      |                      |                      |                      |
| Thermal disconnecter                             | Internal Green – normal ; red - failure                          |                     |                      |                      |                                    |                      |                      |                      |                      |
| Remote alarm contact                             | Optional   |                     |                      |                      |                                    |                      |                      |                      |                      |
| Approvals, Certifications                        | TUV, CE  |                     |                      |                      |                                    |                      |                      |                      |                      |
| Additional data for Remote Alarm Contacts        |  |                     |                      |                      |                                    |                      |                      |                      |                      |
| Remote alarm contact type                        | Isolated Form C  |                     |                      |                      |                                    |                      |                      |                      |                      |
| Switching capability $U_n/I_n$                   | AC: 250V/0.5A  |                     |                      |                      | DC: 250V/0.1A; 125V/0.2A; 75V/0.5A |                      |                      |                      |                      |
| Cross-section of remote signaling wire           | Max. 1.5mm <sup>2</sup> (or # 16AWG)                             |                     |                      |                      |                                    |                      |                      |                      |                      |

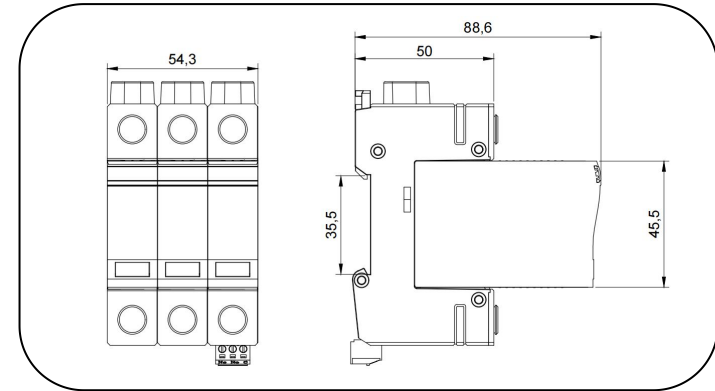
**POWER SUPPLY SYSTEM**

**Class I + Class II (T1+T2), PV DC Surge Arresters**

**PVB12.5/...-V-CD**



Basic circuit diagram



Dimension drawing

The PVB12.5 CD is class I & class II (or T1+T2 ) prewired PV DC SPD designed for DC application such as PV/ Photovoltaic system dc-side protection, especially for location of high risk exposure or LPZ 0-2 building entrances ( IEC 62305-4) to against the damage from direct or close lightning strikes.

With built in PROSURGE high energy MOV, PVB12.5V CD ensures remarkable lightning current discharge capacity up to 12.5kA 10/350µs and high reliability. The unique design of thermal protection provides quick thermal response and secure disconnection.

- TUV certified T1+ T2 PV DC SPD per IEC/EN 61643-31 standard.
- 18mm narrow model design, prewired three poles of Y circuit for common mode & differential mode protection
- Application in Photovoltaic (PV) systems and other DC power system like charging system for electric vehicles etc.
- Unique thermal disconnecter design
- Lightning current capacity up to 12.5kA 10/350µs
- Surge current capability up to 80kA 8/20µs
- Low voltage protection level
- Degradation failure indication and optional remote signal contact.
- Pluggable module for easy replacement without the need to remove system wiring.
- Wide operating temperature -40° C ~85° C
- 35mm DIN-rail mounting
- Comply with EN 50539-11,UL1449 5<sup>th</sup>, IEEE C62.41,CSA C22.2 standards

**POWER SUPPLY SYSTEM**

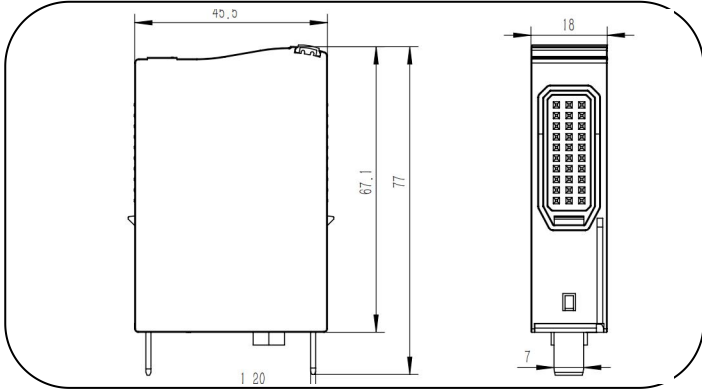
**Technical data**

| Part No.  | PVB12.5/100-V-CD(-S)   | PVB12.5/200-V-CD(-S) | PVB12.5/300-V-CD(-S) | PVB12.5/400-V-CD(-S) | PVB12.5/600-V-CD(-S)               | PVB12.5/800-V-CD(-S) | PVB12.5/1000-V-CD(-S) | PVB12.5/1200-V-CD(-S) | PVB12.5/1500-V-CD(-S) |  |
|---|--|----------------------|----------------------|----------------------|------------------------------------|----------------------|-----------------------|-----------------------|-----------------------|--|
| In accordance with                                    | IEC/EN 61643-31; UL1449 5 <sup>th</sup> ; EN 50539-11            |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Category IEC/EU/VDE                                   | II /1+2/ B+C   |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Protection mode                                       | DC+ to DC- , DC+/- to PE   |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Nominal Voltage (DC) Un                               | 100V   | 200V                 | 300V                 | 400V                 | 600V                               | 800V                 | 1000V                 | 1200V                 | 1500V                 |  |
| Max. continuous operating voltage (DC) Ucpv           | 110V   | 250V                 | 340V                 | 450V                 | 700V                               | 920V                 | 1120V                 | 1340V                 | 1500V                 |  |
| Nominal discharge current (8/20) In                   | 25kA   | 25kA                 | 25kA                 | 25kA                 | 25kA                               | 25kA                 | 25kA                  | 25kA                  | 25kA                  |  |
| Max. discharge current (8/20) Imax                    | 80kA   | 80kA                 | 80kA                 | 80kA                 | 80kA                               | 80kA                 | 80kA                  | 80kA                  | 65kA                  |  |
| Lightning impulse current (10/350) Iimp               | 12.5kA   | 12.5kA               | 12.5kA               | 12.5kA               | 12.5kA                             | 12.5kA               | 12.5kA                | 12.5kA                | 8kA                   |  |
| Voltage protection level Up (DC+/- to PE, DC+ to DC-) | 1.0kV  | 1.2kV                | 1.5kV                | 2.0kV                | 2.5kV                              | 3.0kV                | 3.5kV                 | 4.0kV                 | 4.5kV                 |  |
| Response time tA                                      | ≤25ns  |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Leakage Current Ipe                                   | <0.1mA   |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Short-circuit Current Iscpv                           | 1000A  |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Operating temperature range                           | - 40°C ~ + 85°C  |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Altitude  | -500m ~ +4000m   |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Cross-section of connection wire (max)                | Single-strand 35mm <sup>2</sup> ; multi-strand 25mm <sup>2</sup> |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Mounting  | 35mm DIN-rail in accordance with EN 50022/DIN46277-3             |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Enclosure material                                    | thermoplastic; extinguishing degree UL94 V-0                     |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Degree of protection                                  | IP20   |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Installation width                                    | 3 modules, DIN 43880   |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Thermal disconnecter                                  | Internal Green – normal ; red - failure                          |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Remote alarm contact                                  | Optional   |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Approvals, Certifications                             | TUV, CE  |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Additional data for Remote Alarm Contacts             |  |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Remote alarm contact type                             | Isolated Form C  |                      |                      |                      |                                    |                      |                       |                       |                       |  |
| Switching capability Un/In                            | AC: 250V/0.5A  |                      |                      |                      | DC: 250V/0.1A; 125V/0.2A; 75V/0.5A |                      |                       |                       |                       |  |
| Cross-section of remote signaling wire                | Max. 1.5mm <sup>2</sup> (or # 16AWG)                             |                      |                      |                      |                                    |                      |                       |                       |                       |  |

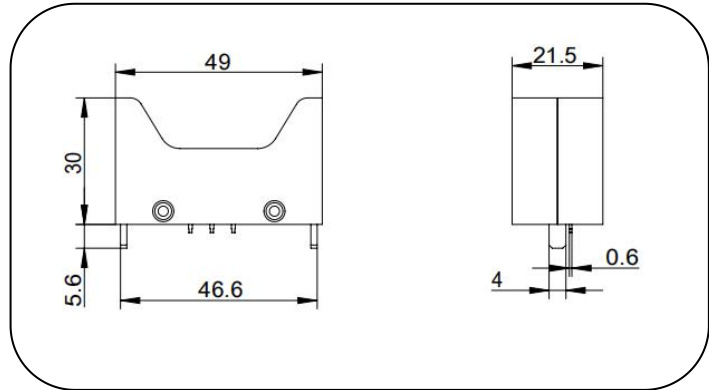
**POWER SUPPLY SYSTEM**

**Plug-In module**

**MPVB12.5...-V**



Dimension drawing of MPV module

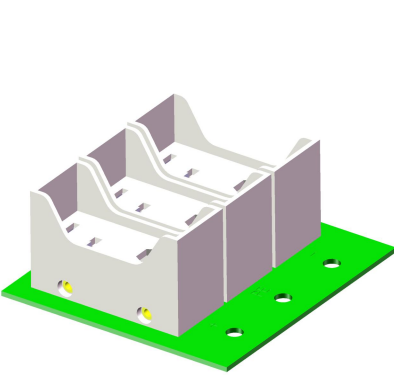


Dimension drawing of PVB\_Base

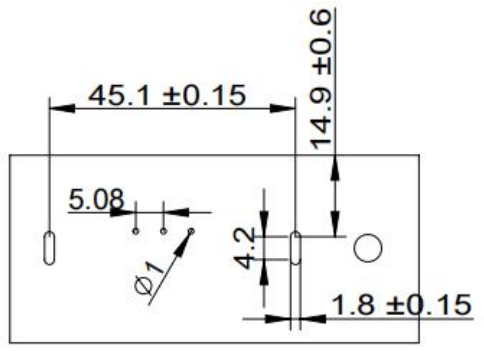
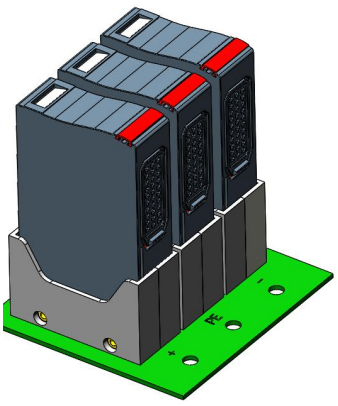
Class I & Class II (or T1 + T2) plug-in module for PVB12.5V series replacement, which is heavy MOV based device with Prosurge's thermal protection and arc extinguishing technology. MPVB12.5 module can be easily integrated on printed circuit boards (PCB) and installed closest to sensitive electronic element inside PV/ DC power electronics while used together with PVB\_Base, it will help to protect the most important circuit and minimize the potential impact of lightning events. Further, optimal voltage protection level is achieved for the electronics of the PCB since there is no cable length between the SPD and the device to be protected. The PVB\_Base also helps to provide floating remote signal for module fault indication.



MPVB12.5 module with PVB\_Base



PVB\_Base can be soldered on PCBs directly



PCB layout dimensions of PVB\_Base

**POWER SUPPLY SYSTEM**

**Technical data**

| Part No.   | MPVB12.5/48<br>-V                                     | MPVB12.5/75<br>-V | MPVB12.5/100<br>0-V | MPVB12.5/150<br>0-V | MPVB12.5/200<br>0-V | MPVB12.5/300<br>0-V                | MPVB12.5/400<br>0-V | MPVB12.5/500<br>0-V | MPVB12.5/600<br>0-V | MPVB12.5/750<br>0-V |
|--|---|-------------------|---------------------|---------------------|---------------------|------------------------------------|---------------------|---------------------|---------------------|---------------------|
| In accordance with                                   | IEC/EN 61643-31; UL1449 5 <sup>th</sup> ; EN 50539-11 |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Category IEC/EU/VDE                                  | I+ II /1+2/ B+C                                       |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Nominal Voltage (DC) Un                              | 48V   | 75V               | 100V                | 150V                | 200V                | 300V                               | 400V                | 500V                | 600V                | 750V                |
| Max. continuous operating voltage (DC) Ucpv          | 55V   | 100V              | 125V                | 170V                | 225V                | 350V                               | 460V                | 560V                | 670V                | 800V                |
| Nominal discharge current (8/20) In                  | 25kA  | 25kA              | 25kA                | 25kA                | 25kA                | 25kA                               | 25kA                | 25kA                | 25kA                | 25kA                |
| Max. discharge current (8/20) I <sub>max</sub>       | 80kA  | 80kA              | 80kA                | 80kA                | 80kA                | 80kA                               | 80kA                | 80kA                | 80kA                | 65kA                |
| Lightning impulse current (10/350) I <sub>imp</sub>  | 12.5kA  | 12.5kA            | 12.5kA              | 12.5kA              | 12.5kA              | 12.5kA                             | 12.5kA              | 12.5kA              | 12.5kA              | 8kA                 |
| Voltage protection level Up                          | 0.6kV   | 0.7kV             | 0.7kV               | 0.8kV               | 1.0kV               | 1.4kV                              | 1.6kV               | 1.8kV               | 2.2kV               | 2.5kV               |
| Leakage Current I <sub>pe</sub>                      | <0.1mA  |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Short-circuit Current I <sub>scpv</sub>              | 1000A   |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Operating temperature range                          | - 40°C ~ + 85°C                                       |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Enclosure material                                   | thermoplastic; extinguishing degree UL94 V-0          |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Degree of protection                                 | IP20  |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Thermal disconnecter                                 | Internal Green – normal ; red - failure               |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Approvals, Certifications                            | TUV, CE   |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Additional data for PVD_Base's remote alarm contacts |   |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Remote alarm contact type                            | Isolated Form C                                       |                   |                     |                     |                     |                                    |                     |                     |                     |                     |
| Switching capability Un/In                           |   |                   |                     |                     | AC: 250V/0.5A       | DC: 250V/0.1A; 125V/0.2A; 75V/0.5A |                     |                     |                     |                     |