

INTELLIGENT SPDs

Intelligent Surge Protective Device (iSPD)

iSPD...

The **Safesurge iSPD** is an intelligent and auto self-protected SPD for the single phase or multi phase power systems. It's an innovative solution for most commercial and industrial environments with critical operations, to make your surge protection smart and intelligent.



The iSPD is composed of three essential parts: surge protective device (SPD), intelligent surge & power monitor (iSPM) or Lightning/Surge event counter LEC-AT and surge circuit breaker (SCB).

Safesurge high performance SPDs (Class I or Class II per IEC 61643-11) of iSPD can protect sensitive equipment from the harmful transient voltage surges resulting from:

- Direct and indirect lightning strikes
- Power company load switching
- Upstream load switching at other facilities

Safesurge iSPM/LEC-AT technology makes it easy to monitor the power & lightning protecting system. This device allows end user to monitor real time power quality for SPD and Lightning/Surge event and get alarm feedback on failure and fault from power system and device self:

- SPD working status with alarm for SPD Failure, **-Model: iSPM02**
- SPD's aging with alarm while close to end-of-life of SPD, **-Model: iSPM02**
- **Lightning and surge event (surge polarity, time-to-event, total events quantity) , - Model: iSPM02/LEC-AT**
- Buzzer alarm when the number of surge events reaches a settable number, **-Model: LEC-AT**
- Backup over-current protection device working status (circuit breaker or fuse) with alarm for CB or fuse open, **-Model: iSPM02**
- Voltage on SPD in real-time, alarm for overvoltage event, **-Model: iSPM02**
- Grounding conditions of SPD with alarm for Grounding fault, **-Model: iSPM02**
- N line lost alarm (screen light off while lost, alarm by remote signal contact), **-Model: iSPM02**



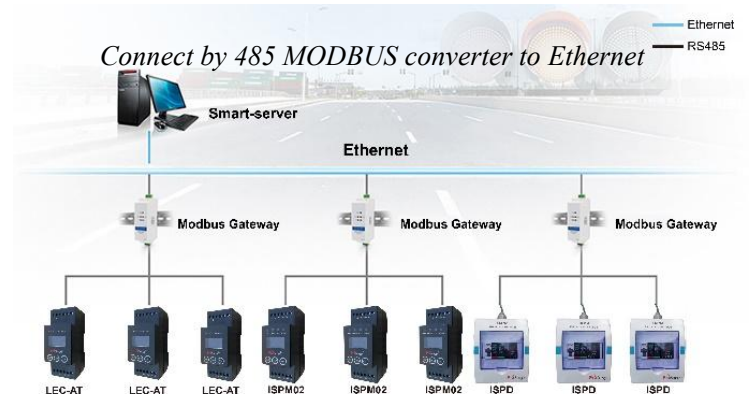
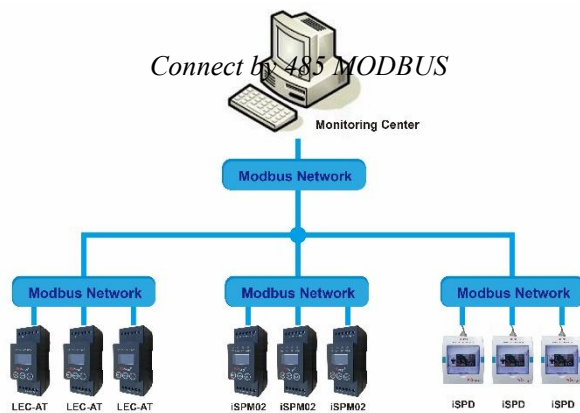
User interface of iSPM-02

Safesurge SCB provides backup over-current protection for the SPD, which is fully coordinated with the surge protective device. Comparing to normal backup circuit breaker/fuse, the integrated Safesurge SCB achieve a better balance between surge withstand performance (no tripping while expected surge occurs) and sharp reaction against short circuit and abnormal leakage current.

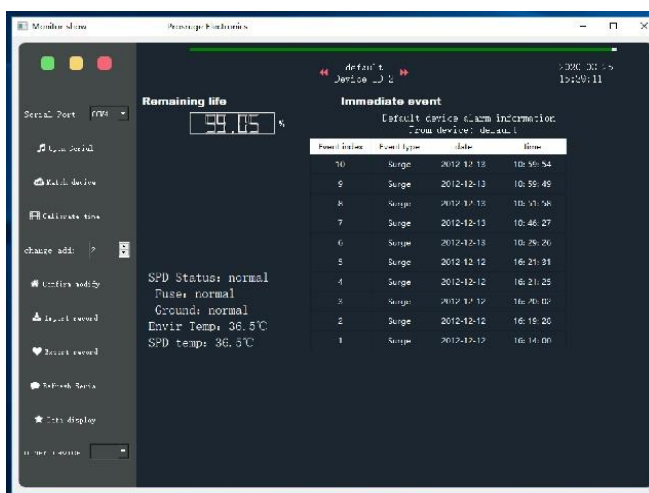
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The iSPD can communicate with computer or smart terminal.

It can connect RS485 half-duplex MODBUS RTU protocol communication mode to the remote monitoring center. Or through the "RS485/Ethernet converter", the MODBUS communication protocol can be converted to the Ethernet protocol, allowing the iSPD to connect to the Internet.



Once the iSPDs are connected to network, end user will be easy to get accurate and convenient information through computer software or smartphone apps, and be able to act quickly to guarantees system uninterrupted operation based on optimal information.



Brows information on PC

■ Typical Applications:

- Commercial
- Industrial
- Communications
- Renewable energy
- Critical power (hospitals, data centers, etc)

■ Features:

- High performance SPD inbuilt with Iimp 12.5kA 10/350 for Class I and In 20kA 8/20 for Class II application (based on the selected model), comply with IEC/EN 61643-1/11, UL1449 4th standards;
- Pluggable module of SPD for easy replacement
- Self protected by PROSUGE innovated Surge circuit breaker technology, SPD will never stop service in the life time and no fire risk while in the end of life
- Intelligent monitor (iSPM) helps end user to know all accurate information about power system abnormal conditions in order to take action in time.
- Surge events and system fault events logging, 999 events recording data (ISPM).
- Buzzer alarm when the number of surge events reaches a settable number(LEC-AT)
- OLED display is convenient for end user to view present or history information
- With RS485 network and Ethernet, end user can control and manage the system in short or remote distance
- Visual and audible alarm for several functions, like SPD degradation or Failure, abnormal Power system conditions, back up CB or Fuse open, Surge event counting to a pre-set alarm number etc.
- Easy installation
- IP20 enclosure to resist dirt, dust and water

■ Configure & Ordering Information:

<i>iSPD</i>	<i>-02</i>	<i>/C</i>	<i>320</i>	<i>-PN</i>	<i>-SCB</i>
Intelligent SPD Model series	Intelligent Surge & Power Monitor Model Series	SPD category per IEC/EN	Max. operating voltage (Uc)	SPD config	Back up Surge Circuit Breaker
<i>iSPD</i>	<i>-02</i> : iSPM02 <i>-AT</i> : LEC-AT ...	<i>B</i> : Class I or T1 <i>C</i> : Class II or T2	<i>320</i> :75VAC~320 VAC	<i>2</i> : Two poles(2+0) <i>PN</i> : Two poles(1+1) <i>3</i> : Three poles(3+0) <i>4</i> : Four poles(4+0) <i>3PN</i> : Four poles(3+1)	With or without

■ Intelligent Surge & Power Monitor choice

Function	-02	-AT
Lightning and surge event logging and (surge polarity, time-to-event, total events quantity)	✓	✓
Pre-set alarm number of surge event		✓
SPD working status with alarm	✓	
SPD's aging with alarm	✓	
Backup over-current protection device working status with alarm	✓	
Voltage on SPD in real-time with alarm	✓	
Neutral line monitor with alarm	✓	

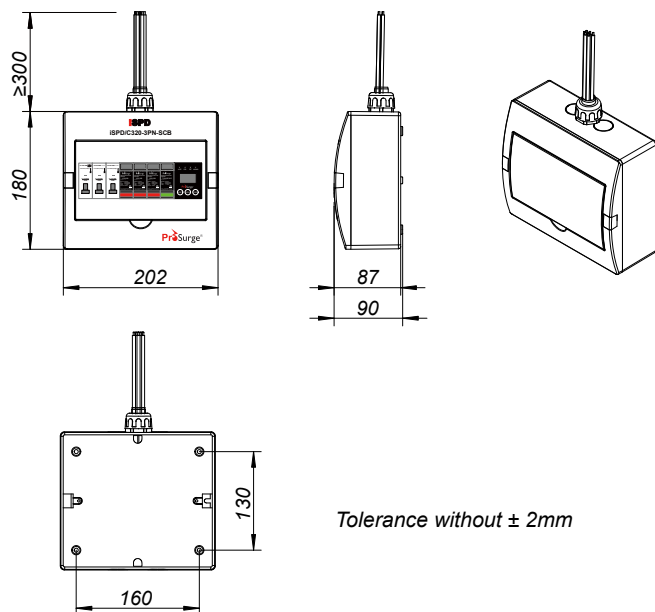
Model: iSPD-02/...-SCB

■ Technical Specification

		iSPD-02/B320-PN-SCB	iSPD-02/B320-3PN-SCB	iSPD-02/C320-PN-SCB	iSPD-02/C320-3PN-SCB
SPD Specification					
SPD Category IEC/EN		Class I / T1	Class I / T1	Class II / T2	Class II / T2
Power System		TT/TN 1ph	TT/TN 3ph	TT/TN 1ph	TT/TN 3ph
System Voltage	Un	220/380V ~ 240/415V			
Max. Continuous Operating Voltage AC	Uc	320VAC			
Lightning Impulse Current (10/350 μs)	Iimp	L-N: 12.5kA N-PE:25kA	L-N: 12.5kA N-PE:50kA	(blank)	(blank)
Nominal Discharge Current (8/20 μs)	In	L-N: 25kA N-PE:25kA	L-N: 25kA N-PE:50kA	20kA	20kA
Max. Discharge Current (8/20 μs)	I _{max}	80kA	80kA	50kA	50kA
Voltage Protection Level	Up	1.5kV	1.5kV	1.5kV	1.5kV
Residual Current	I _{pe}	<0.1mA			
TOV- Withstand Mode	U _{toV}	L-N:335V/5s; N-PE:1200V/200ms			
Short Circuit Current Rating	I _{sc}	25kArms			
Response Time	T _a	≤25 ns			
Thermal Disconnecter / Indication		Internal red - failure			
iSPM Specification or LEC-AT(alternative)					
Model		iSPM02		LEC-AT	
Display Screen		OLED screen			
Event Logging		999 events			
Surge Event Counting		Counting Current ≥100A (adjustable)			
Communication Interface		RS485			
Indication		Buzzer / Indicator/remote signal		Buzzer / Indicator	
SCB Specification					
Operating Short-Circuit Breaking Capacity	I _{cs}	≥10kA			
Trip Current	I _t	3 ± 1A			
Trip Time	T _t	≤40ms			
Surge Withstand Capability	I _w	Match with SPD Max. Surge current			
General Parameters					
Connection		Connection in parallel			
Connecting Cable		Power line:10-35mm ² ; Remote signal:1.5mm ²			
Operation Temperature Range		-40℃~+70℃			
Humidity		30%~90%			
Degree Of Protection		IP20			
Housing Material		UL94V0			
Mounting		Wall mounting			
Dimension (mm)		3 Phase : 200*180*87 ; 1 Phase: 148*180*87			

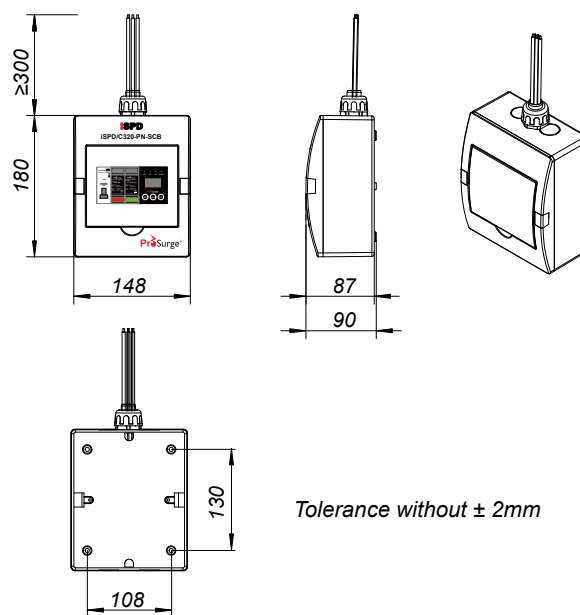
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■ Dimensions (unit: mm)



Tolerance without $\pm 2\text{mm}$

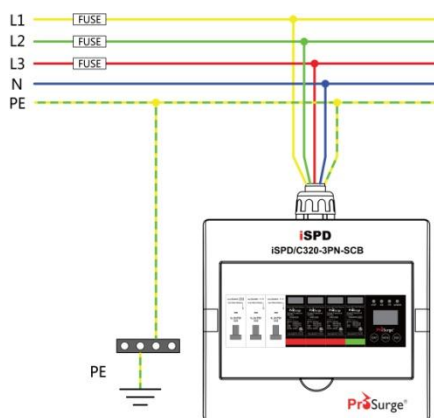
iSPD for three phase (TT/TN)



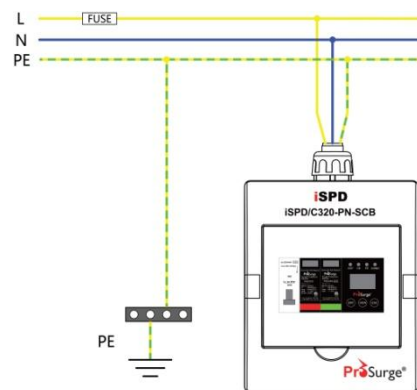
Tolerance without $\pm 2\text{mm}$

iSPD for single phase (TT/TN)

■ Typical Installation Diagram



Three phase wiring (TT/TN)



Single phase wiring (TT/TN)

■ Product pictures



iSPD for three phase



iSPD for single phase

Model: iSPD-AT/...

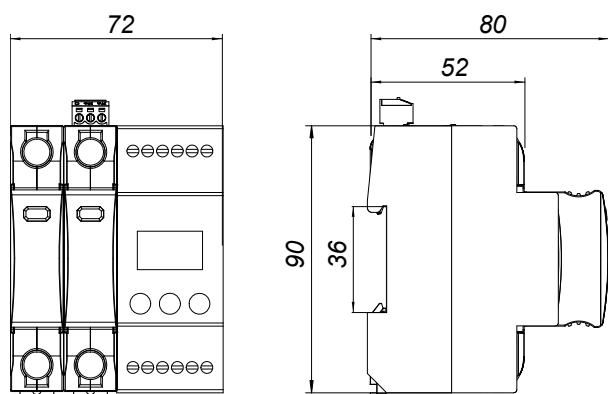
This model is composed of two essential parts: surge protective device (SPD) and Surge event counter LEC-AT, which is convenient to browse lightning and surge event information (surge polarity, time-to-event, total events quantity) locally or remotely.

Safesurge LEC-AT can work not only to count Lightning or surge events frequency and source of the surge but also to alarm when total Lightning or Surge events up to a pre-set alarm number, which is a important monitoring information for SPDs' surge life so that users can replace SPDs in time before SPDs surge service life end, to guarantee uninterrupted surge protection function in the system. Also LEC-AT can provide convenient records review on display or output to computer in Excel form through RS485 terminal.

■ Technical Specification

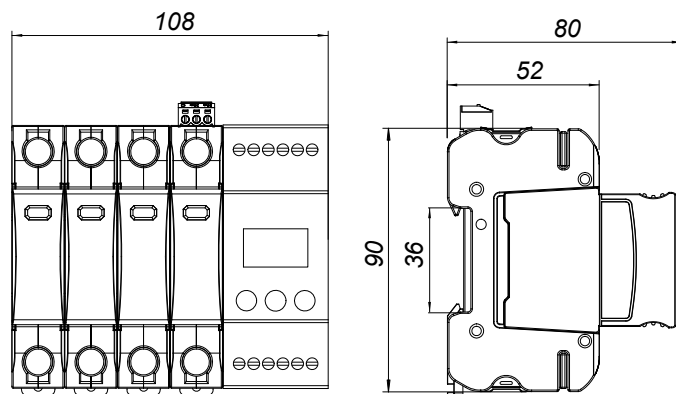
		iSPD-AT/B320-PN	iSPD-AT/B320-3PN	iSPD-02/C320-PN	iSPD-02/C320-3PN
SPD Specification					
SPD Category IEC/EN		Class I / T1	Class I / T1	Class II / T2	Class II / T2
Power System		TT/TN 1ph	TT/TN 3ph	TT/TN 1ph	TT/TN 3ph
System Voltage	Un	220/380V ~ 240/415V			
Max. Continuous Operating Voltage AC	Uc	320VAC			
Lightning Impulse Current (10/350 μs)	Iimp	L-N: 12.5kA N-PE:25kA	L-N: 12.5kA N-PE:50kA	(blank)	(blank)
Nominal Discharge Current (8/20 μs)	In	L-N: 25kA N-PE:25kA	L-N: 25kA N-PE:50kA	20kA	20kA
Max. Discharge Current (8/20 μs)	I _{max}	80kA	80kA	50kA	50kA
Voltage Protection Level	Up	1.5kV	1.5kV	1.5kV	1.5kV
Residual Current	I _{pe}	<0.1mA			
TOV- Withstand Mode	U _{toV}	L-N:335V/5s; N-PE:1200V/200ms			
Short Circuit Current Rating	I _{sc}	25kArms			
Response Time	T _a	≤25 ns			
Thermal Disconnecter / Indication		Internal red - failure			
LEC-AT specification					
Model		LEC-AT			
Display Screen		OLED screen			
Event Logging		999 events			
Surge Event Counting		Counting Current ≥100A (adjustable)			
Communication Interface		RS485			
Indication		Buzzer / Indicator			
General Parameters					
Connection		Connection in parallel			
Connecting Cable		Power line:10-35mm ² ; Remote signal:1.5mm2			
Operation Temperature Range		-40℃~+70℃			
Humidity		30%~90%			
Degree Of Protection		IP20			
Housing Material		UL94V0			
Mounting		Wall mounting			
Dimension (mm)		Refer to dimension drawing as below			

■ Dimensions (unit: mm)



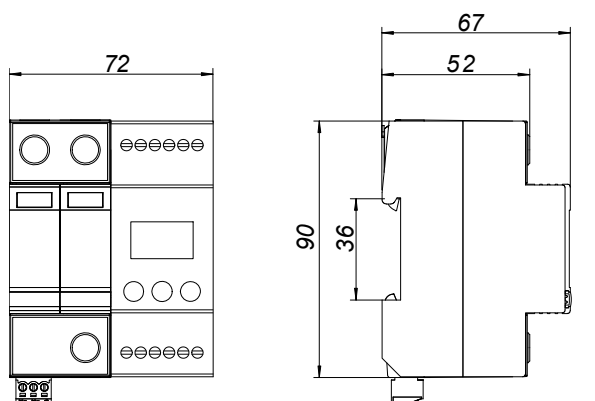
Tolerance without ± 2 mm

iSPD-AT T1/Class I for single phase(TT/TN)



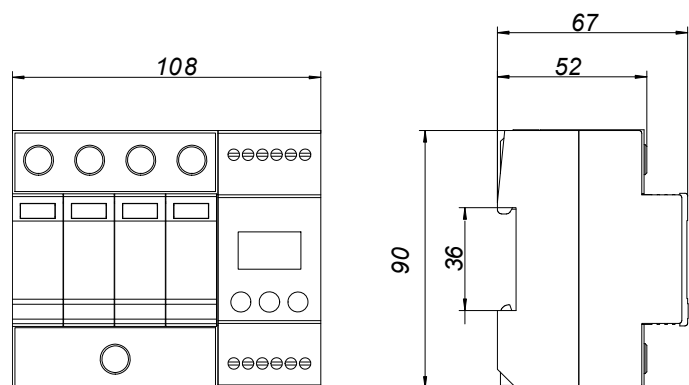
Tolerance without ± 2 mm

iSPD-AT T1/Class I for three phase (TT/TN)



Tolerance without ± 2 mm

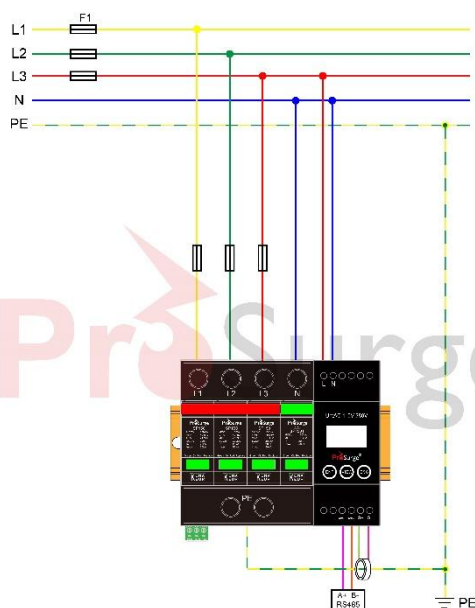
iSPD-AT T2/Class II for single phase(TT/TN)



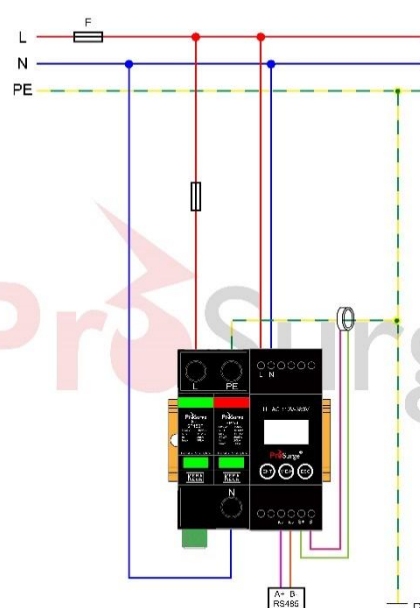
Tolerance without ± 2 mm

iSPD-AT T2/Class II for three phase (TT/TN)

■ Typical Installation Diagram



Three phase wiring (TT/TN)



Single phase wiring (TT/TN)

Model: iSPD-...-SCB

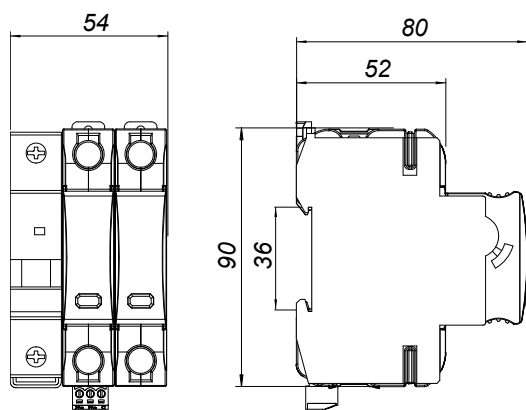
This model is composed of two essential parts: surge protective device (SPD) and surge circuit breaker (SCB). This product is pre-wired and easy to be installed as a completed unit, which is an upgraded design to replace the conventional installation assembly of the SPD and backup over-current protection devices.

Safesurge SCB provides excellent backup over-current protection and fully coordinated with the SPD. Comparing to normal backup circuit breaker/fuse, the integrated Safesurge SCB achieves a better balance between surge withstand performance (no tripping while expected surge occurs) and sharp reaction against short circuit and abnormal leakage current.

■ Technical Specification

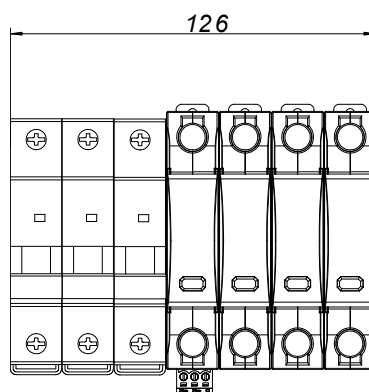
		iSPD-B320-PN-SCB	iSPD-B320-3PN-SCB	iSPD-C320-PN-SCB	iSPD-C320-3PN-SCB
SPD Specification					
SPD Category IEC/EN		Class I / T1	Class I / T1	Class II / T2	Class II / T2
Power System		TT/TN 1ph	TT/TN 3ph	TT/TN 1ph	TT/TN 3ph
System Voltage	Un	220/380V ~ 240/415V			
Max. Continuous Operating Voltage AC	Uc	320VAC			
Lightning Impulse Current (10/350 μs)	Iimp	L-N: 12.5kA N-PE:25kA	L-N: 12.5kA N-PE:50kA	(blank)	(blank)
Nominal Discharge Current (8/20 μs)	In	L-N: 25kA N-PE:25kA	L-N: 25kA N-PE:50kA	20kA	20kA
Max. Discharge Current (8/20 μs)	I _{max}	80kA	80kA	50kA	50kA
Voltage Protection Level	Up	1.5kV	1.5kV	1.5kV	1.5kV
Residual Current	I _{pe}	<0.1mA			
TOV- Withstand Mode	U _{toV}	L-N:335V/5s; N-PE:1200V/200ms			
Short Circuit Current Rating	I _{sc}	25kArms			
Response Time	T _a	≤25 ns			
Thermal Disconnecter / Indication		Internal red - failure			
SCB Specification					
Operating Short-Circuit Breaking Capacity	I _{cs}	≥10kA			
Trip Current	I _t	3±1A			
Trip Time	T _t	≤40ms			
Surge Withstand Capability	I _w	Match with SPD Max. Surge current			
General Parameters					
Connection		Connection in parallel			
Connecting Cable		Power line:10-35mm ² ; Remote signal:1.5mm2			
Operation Temperature Range		-40℃~+70℃			
Humidity		30%~90%			
Degree Of Protection		IP20			
Housing Material		UL94V0			
Mounting		Wall mounting			
Dimension (mm)		Refer to dimension drawing as below			

■ Dimensions (unit: mm)



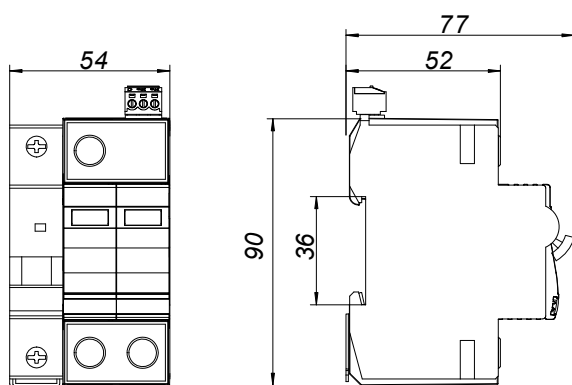
Tolerance without ± 2 mm

iSPD-SCB T1/Class I for single phase(TT/TN)



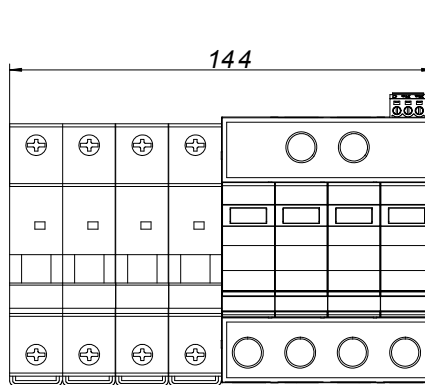
Tolerance without ± 2 mm

iSPD-SCB T1/Class I for three phase (TT/TN)



Tolerance without ± 2 mm

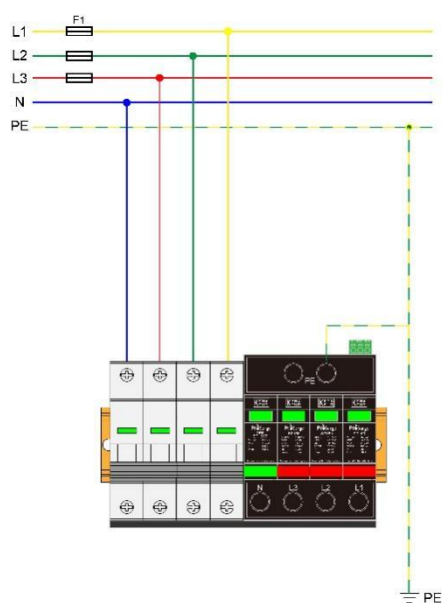
iSPD-SCB T2/Class II for single phase(TT/TN)



Tolerance without ± 2 mm

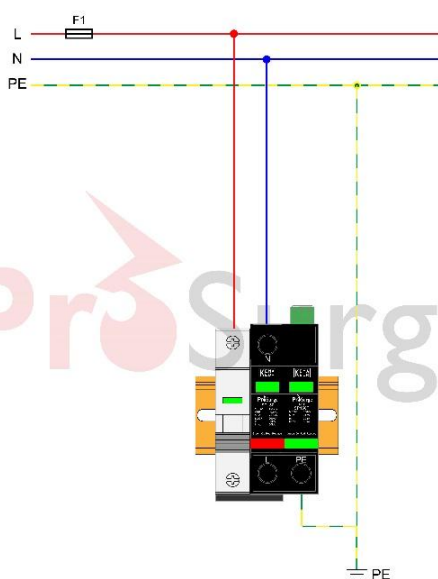
iSPD-SCB T2/Class II for three phase (TT/TN)

■ Typical Installation Diagram



Three phase wiring (TT/TN)

(end)



Single phase wiring (TT/TN)