Surge and Lightning Counters

Electrical surges are high-frequency current events that present potential danger to sophisticated electronic devices. Electrical surges can occur at almost any time, and the most common causes are lightning strikes, the switching of inductive loads, power grid disturbances, general fault or arcing conditions. In the case of a direct lightning strike the damage caused by surge currents is clearly felt and often visible. However, many other electrical surge events can go unnoticed. The consequences of such 'quiet' disturbances can be just as detrimental to the operation.

Surge currents can cause loss of data transmission, switch tripping, disturbance of machine control systems and a slow degradation of circuit elements. In addition, a surge can be an indicator of a short circuit which causes currents of power to travel along unintended paths with little or no electrical impedance, for example after a blackout or wiring insulation damage.

Raycap's ProGRID surge and lightning counter solutions have different capabilities that can sense, record and transmit the occurrence of otherwise undetectable surge currents, enabling users to take preventive measures and plan appropriate maintenance.

ProLEC Basic

ProSEC II+

DATA SHEET

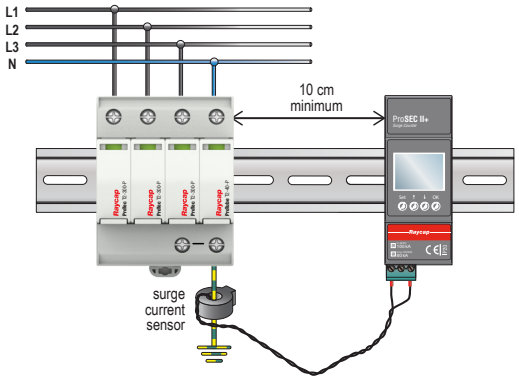
ProSEC II+

RoHS COMPLIANT CE

Features

- LCD screen displays number of surges, hour, minute and date of surge event
- Buttons for TIME/DATE setting and log viewing
- Replaceable battery, lifetime up to two years
- Easy to install, snap-on surge current sensor
- Complies with: IEC 62561-6
- EN/IEC CATEGORY: Type I, Type II

Typical Installation

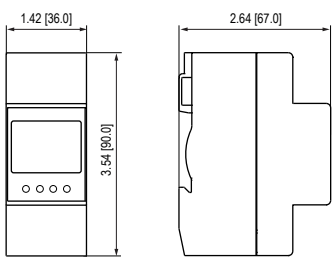


The ProSEC II+ is a surge counter with additional functionality. Besides counting the number of surges, it also logs the date and time of each surge. This additional time and date logging function makes it possible to pinpoint the exact time of every surge and correlate it with equipment and power supply problems inside a facility or structure.

Technical Data

inches [mm]

Electrical	
ProSEC II+ Order Code	**130 100**
Minimal Discharge Current (8/20) [I_{min}]	100 A
Nominal Discharge Current (8/20) [I_n]	100 kA
Minimum Impulse Discharge Current (10/350) [$I_{imp\ min}$]	100 A
Impulse Discharge Current (10/350) [I_{imp}]	80 kA
Power Supply	Replaceable CR17335 lithium battery Lifetime up to two years
Maximum Events Logged	999
Mechanical	
Mounting Method EN 60715	35 mm DIN rail
Maximum Wired Diameter through Current Sensor	0.55" [14 mm]
Sensor Cable	19.7" [0.5 m]
Temperature Range	-4 °F to +158 °F [-20 °C to +70 °C]
Environmental Ingress Protection (IP) Rating	IP 20
Enclosure Material	Thermoplastic; Extinguishing degree UL 94 V-0
Packaging Dimension (L × W × D)	4.33" × 1.65" × 3.27" [110 × 42 × 83 mm]
Dimensions DIN 43880	2 TE
Weight	.33 lbs [150 g]
Standards Compliance & Certifications	
Standards	IEC 62561-6
EN/IEC Category	Type I, Type II
Certification	RoHS, CE
Product Diagram	



DATA SHEET

ProLEC Basic

RoHS COMPLIANT CE

Features

- LCD screen displays the number of lightning strikes, the hour, minute, and date of lightning events
- Buttons enable TIME/DATE setting and log viewing
- Features a replaceable battery with a lifetime of up to two years
- The contactless sensor is easily installed without modifications to existing setups
- Complies with IEC 62561-6 standard

Typical Installation

ProLEC Basic is a basic lightning current sensor that detects and logs lightning discharges flowing through the down-conductor. It is capable of measuring and withstanding currents up to 100 kA (10/350 µs).

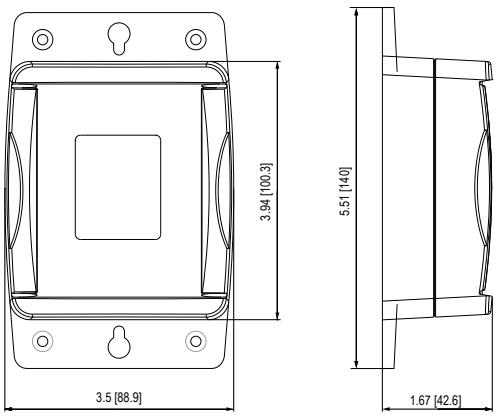
Installing the ProLEC Basic on the exterior of a building or structure provides users with vital information on the frequency, date, time, and atmospheric discharges affecting the structure. This enables timely repairs or preventative measures.

Technical Data

inches [mm]

Electrical	
ProLEC Basic Order Code	**130 523**
Threshold Current (8/20) [I_{tc}]	1 kA
Minimum Withstand Current (10/350) [I_{mcw}]	100 kA
Maximum Events Logged	999
Power Supply	CR17335 lithium batteries Lifetime: up to two years
Mechanical	
Mounting Method	Direct on Down Conductor
Operating Temperature	-4 °F to +140 °F [-20 °C to +60 °C]
Enclosure Material	UL 94V-Z Polycarbonate
Environmental Ingress Protection (IP) Rating	IP 65
Packaging Dimension (L×W×D)	5.51"×3.5"×1.68" [140×88.9×42.6 mm]
Weight	.97 lbs [440 g]
Standards Compliance & Certifications	
Standards	IEC 62561-6
Certification	RoHS, CE

Product Diagram



Surge Protection Device Monitoring

Most Surge Protective Devices (SPDs) are designed to be self-sacrificial, often failing in order to protect more expensive equipment downstream. In essence, their life is based on the magnitude and frequency of surges they have diverted and absorbed. Due to the accumulation of many small surges or a single large surge that exceeds the SPD's maximum discharge or impulse current rating, the SPD will eventually reach its end-of-life state. Upon reaching end-of-life, a correctly designed SPD will safely disconnect itself from the power supply. Such disconnection usually goes unnoticed since the indicator light is located directly on the SPD, which may not be frequently inspected due to its remote location.

With Raycap's SPD life status indication devices it is easy for users to receive information about a failed SPD device immediately, or more importantly, to get a warning when an SPD is nearing its end-of-life. With these devices installed, power supply network operators know when to replace their SPD protection, which is just as important as having surge protection installed in the first place.

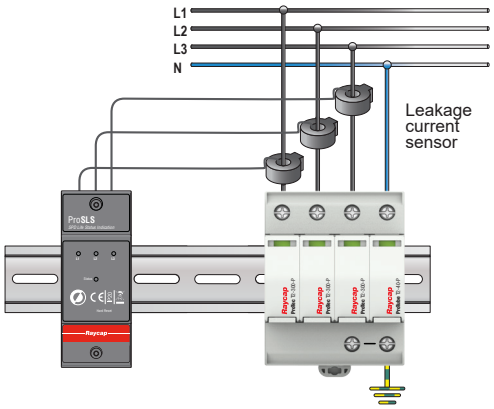
DATA SHEET # ProSLS

RoHS COMPLIANT CE

Features

- Automatic adjustment to all SPD sizes and models
- Replaceable battery, lifetime up to two years
- Continuously monitors leakage current of an SPD

Typical Installation

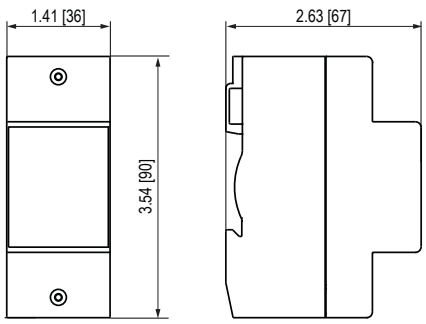


ProSLS is a device that continuously monitors the leakage current of an SPD, which is the most accurate predictor of a SPD's life status. Using measured current, ProSLS is able to predict the advanced degradation of an SPD and convey this information to the user.

Technical Data

inches [mm]

Electrical	
ProSLS Order Code	**130 551**
Lowest Measurable Current (SPD Leakage)	100 µA
SPD Degradation Alarm	≥ 5mA for 1 hour
Power Supply	Replaceable 3.6V (ER AA) battery Lifetime up to two years
Remote Contacts	1 A 45 VAC/30 VDC
Mechanical	
Mounting Method EN 60715	35 mm DIN rail
Maximum Wired Diameter through Current Sensor	0.47" [12 mm]
Sensor Cable	39.4" [1 m]
Temperature Range	-22 °F to +158 °F [-30 °C to +70 °C]
Enclosure Material	Thermoplastic; Extinguishing degree UL 94 V-0
Environmental Ingress Protection (IP) Rating	IP 20
Packaging Dimension (L × W × D)	4.33" × 4.53" × 2.95" [110 × 115 × 75 mm]
Dimensions DIN 43880	2 TE
Weight	.88 lbs [399 g]
Standards Compliance & Certifications	
Standards	IEC/EN 61326-1
Certification	RoHS, CE
Product Diagram	



DATA SHEET

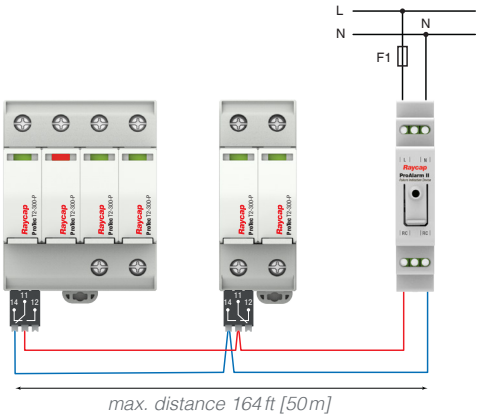
ProAlarm II

RoHS COMPLIANT CE

Features

- Audio alarm SPD failure indication
- Red LED visual SPD failure indication
- Button for acknowledging and silencing the alarm
- Multiple SPDs connected to one ProAlarm II
- Rated voltage AC: 110 V-230 V

Typical Installation



ProAlarm II is a failure indication device that informs the user of the need to replace a failed SPD. It can be quickly and easily installed next to the SPD on the same rail, by making a connection between the RC contacts of the SPD and the alarm unit.

If an SPD fails, the user is informed by a loud audible beeping sound and the illumination of a red LED.

The alarm can be silenced with the press of a button, leaving the LED illuminated until the SPD has been replaced.

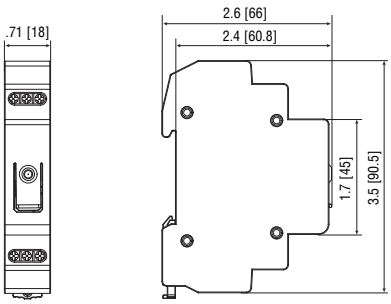
Technical Data

inches [mm]

Electrical	
ProAlarm II Order Code	**130 562**
Rated Voltage (AC)	110 - 230 V
Rated Frequency	50 Hz - 60 Hz
Rated Current	0 mA
Rated Current (Beeping)	10 mA (110 V); 21 mA (230 V)
Overcurrent Protection (max)	16 A
RC Rated Current	10 mA (110 V); 21 mA (230 V)
TOV Withstand 120 min(1)	442 V
Maximum Discharge Current [I_{max}] (8/20 µs)(1) (2)	50 kA
Impulse Discharge Current [I_{imp}] (10/350 µs)(1) (3)	12.5 kA
Mechanical	
Overvoltage Category	III
Mounting Method EN 60715	35 mm DIN Rail
Operating Temperature	-20 °C to +70 °C [-4 °F to + 158 °F]
Enclosure Material	Thermoplastic; Extinguishing Degree UL 94 V-0
Environmental Ingress Protection (IP) Rating	IP 20
Operating State / Display	Red LED / Audible Alarm
Sound Power Level [L_{WA}]	70 dB
Dimensions DIN 43880	1TE
Packaging Dimension (L x W x D)	3.1" x 0.9" x 4.3" [77.8 x 23 x 108 mm]
Weight	.12 lbs [53 g]
Standards Compliance & Certifications	
Standards	IEC 61010-1:2010+A1:2016, EN 61010-1:2010+A1:2019
Certification	RoHS, CE

(1)per IEC/EN 61643-11 (2)Only in parallel with T2 SPD where Uc ≤ 350V. (3)Only in parallel with T1 SPD where Uc ≤ 350V.

Product Diagram



Raycap

www.raycap.com

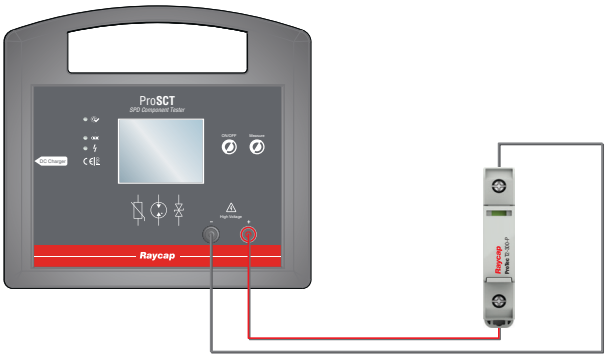
DATA SHEET

ProSCT

Features

- Measurement of MOVs, GDTs and TVSs
- Test GDTs and MOVs up to 1500 VDC
- Auto-detects the type of component connected
- Displays list of successive measurements using LOG Mode
- Color TFT display and touchscreen interface
- Rechargeable battery included

Typical Installation



The ProSCT (SPD Component Tester) tests the components used in Raycap surge protective devices, such as Gas Discharge Tubes (GDT), Metal Oxide Varistors (MOV), and Transient Voltage Suppressors (TVS).

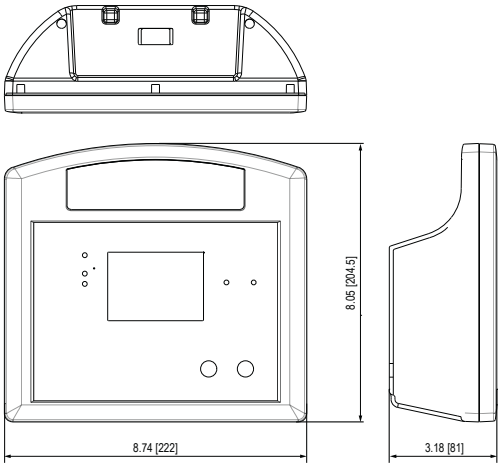
It is a portable, battery-operated instrument with an integrated battery charger housed in a robust enclosure. The instrument features a 320 × 240 pixel TFT color display with touch screen interface.

Technical Data

inches [mm]

Electrical	
ProSCT	**130 574**
ProSCT in Suitcase	**130 576**
ProSCT in Suitcase with SPD Adapter	**130 572**
MOV & TVS Test Current	0.1 mA; 0.5 mA; 1 mA
GDT Voltage Ramp	100 V/s; 1000 V/s
Maximum Test Voltage	1500 VDC
MOV Measurement Error	1.5% +/- 2 digit counts
GDT Measurement Error	3.5% +/- 2 digit counts (1 kV/s) 1.6% +/- 2 digit counts (100 V/s)
Mechanical	
Operating Temperature (°C)	-10 °C to +50 °C
Enclosure Material	UL-94-HB ABS
Environmental Ingress Protection (IP) Rating	IP 20
Packaging Dimension (L × W × D) - Suitcase	4.5" × 10.1" × 14.3" [115 × 256 × 363 mm]
Weight	2.43 lbs [1100 g]
Standards Compliance & Certifications	
Standards	EN 61626-1 IEC 61010-1
Certification	RoHS, CE

Product Diagram

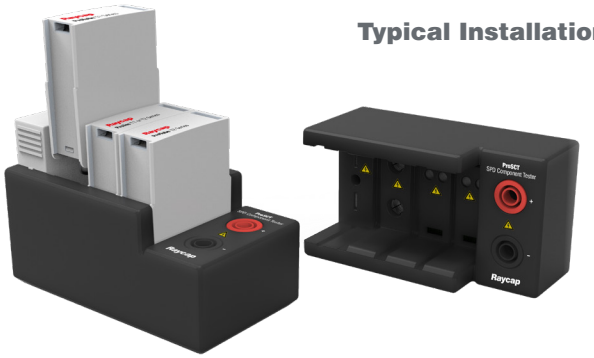


ProSCT SPD Adapter

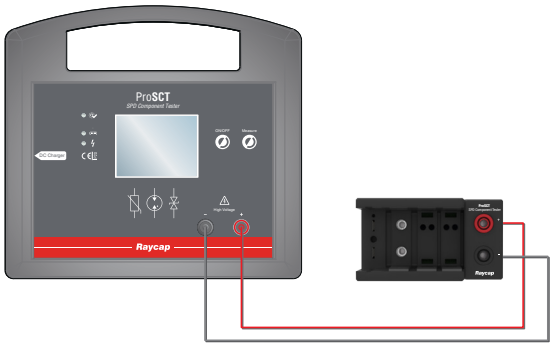
RoHS COMPLIANT CE

Features

- Connected to the ProSCT instrument via means of cable with banana jack plugs
- Four connection sockets for different types of SPD modules
- Typical width of SPD modules is 1TE or 2TE (2TE width available only for new SPD spring contacts)



Typical Installation

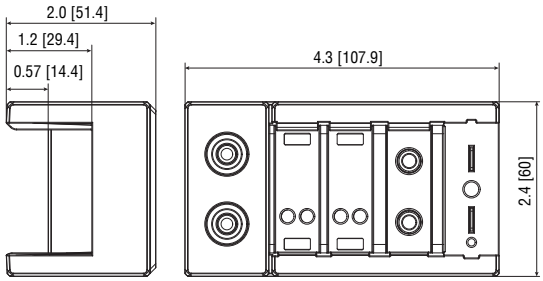


The ProSCT SPD adapter is intended as an accessory for the ProSCT (SPD Component Tester). It is used to interface a DIN rail base assembly to the ProSCT instrument. The base assembly is designed to accommodate various generations of Raycap SPD modules.

Technical Data

inches [mm]

Electrical	
SPD Adapter	**130 575**
Connections towards SPD tester	Banana jack
Connections towards SPD modules	Old SPD flat contacts, NPE bullet contact, 2 New SPD spring contacts (for 1TE and 2TE modules)
Operating temperatures	-10 °C to +50 °C
Packaging Dimension (L×W×D)	4.0"×2.5"×4.3" [102×64×110 mm]
Weight	.38 lbs [175 g]
Standards Compliance & Certifications	
Standards	IEC 61010-1
Certification	RoHS, CE
Connections	



G29-00-159 260907

Wind Turbine Lightning Strike Monitoring

The ProLEC FO lightning strike monitoring system helps optimize operations and maintenance procedures for wind turbines. The system consists of a sensor and optical to electrical converter that communicate via fiber optic cable.
The optical to electrical converter sends data to the external device using a simple signaling protocol.

The user's equipment receives alarms transmitted by the optical to electrical converter.

ProLEC FO Series

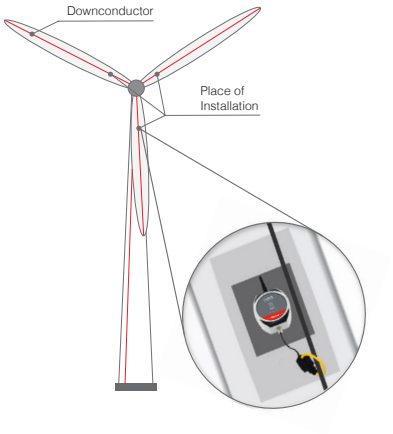
DATA SHEET

ProLEC FO System

Features

- Detects direct lightning strikes to a wind turbine's Lightning Protection System (LPS)
- Capable of sensing lightning strikes with amplitudes exceeding 2 kA
- Easy mounting process
- Fiber optic communication with a 10-meter optic cable included, providing high-voltage isolation

Typical Installation



Technical Data

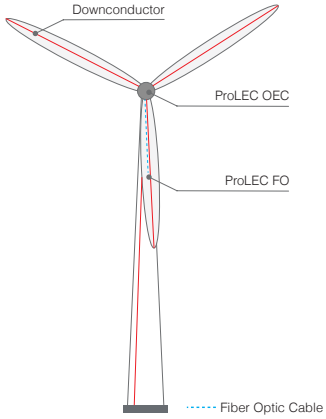
inches [mm]

Electrical		
ProLEC FO System		**130 533**
ProLEC FO Sensor		**130 535**
ProLEC FO		**130 534**
Impulse Discharge Current [I_{imp}]		100 kA
Minimum Impulse Discharge Current [$I_{imp\ min}$]		2 kA
Nominal Discharge Current [I_n]		100 kA
Minimum Nominal Discharge Current [$I_{n\ min}$]		2 kA
Power Supply		Replaceable battery 3.6 V (Size D) Battery Life 3 Years typical
Communication		Fiber optic
Mechanical		
Temperature Range	Sensor	-40 °C to +55 °C
Environmental Ingress Protection (IP) Rating		IP 67
Housing Material of Sensor		GD-Al Si 12 (DIN 1725)
Dimensions		156 × 119 × 65 mm [6.15" × 4.7" × 2.6"]
Weight per Unit	Without Battery	1.52 lbs. [690 g]
	With Battery	1.74 lbs. [790 g]
Standards Compliance & Certifications		
Standards		EN 61326-1; EN 60068-2; IEC 62561-6
EN/IEC Category		Type I, Type II
Certification		RoHS, CE

Raycap

RoHS COMPLIANT CE

Typical Installation



Technical Data

inches [mm]

Electrical		
ProLEC OEC		**130 537**
Power Supply		DC 5-30V
Communication		communication to sensor fiber optic
		communication to external device see User Manual Appendix A
Mechanical		
Temperature Range	Sensor	-40 °C to +55 °C
Environmental Ingress Protection (IP) Rating		IP 20
Housing Material of Sensor		PA (polyamide) V0 (UL94)
Dimensions		124×99×22.6 mm
		4.9"×3.9"×0.9"
Weight per Unit		0.24 lbs. [110 g]
Standards Compliance & Certifications		
Standards		EN 61326-1
Certification		RoHS, CE

Technical Data

Mechanical	
Fiber Optic Cable	**130 536**
Cable Type	1 mm diameter, Standard POF grade
Attenuation	0.22 dB/m typical (-40°C to 85°C)
Construction	Duplex plastic fiber, with black polyethylene jacket
Flame rating	Complies with UL VW-1 flame-retardant specification
Termination	Unterminated
Max. operational length	20 m