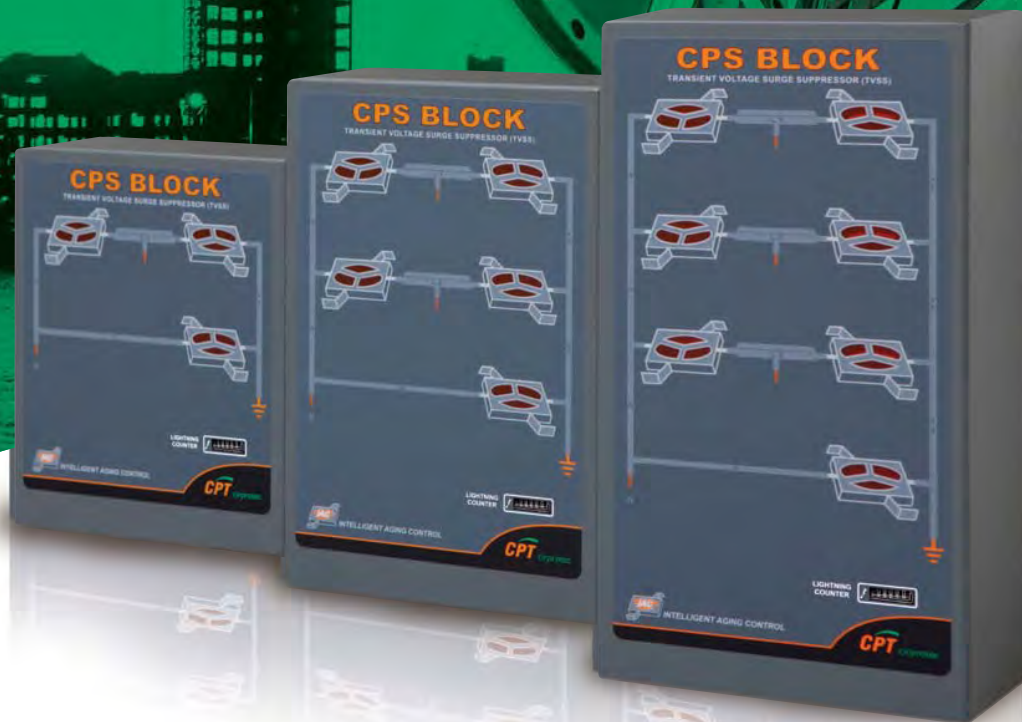


# Cirprotec

## CPS BLOCK (TVSS)

Modular Surge Protective Panels



UL 1449 3rd Edition  
UL 1449 2nd Edition  
IEC 61643

TRANSIENT VOLTAGE SURGE SUPPRESSOR

## CIRPROTEC



### THE SPECIALIST COMPANY

The company's foundation back in 1993 took place as a result of the endeavor of the founders to meet the need for surge protection in the Spanish national banking sector.

**Cirprotec** is nowadays the experienced specialist in Lightning, Surge and Overvoltage Protection supplying industrial, tertiary and residential sectors with the widest range of solutions in the market.

The headquarters of **CPT** are located in Terrassa (Barcelona, Spain), where its activity is developed on a surface of over 6000 sqm of offices, labs and manufacturing plants.

**Cirprotec** supplies everything revolving around protection against lightning and surges, both for external and internal protection:

- Surge protectors: transient and permanent (TOV) overvoltage protectors for electrical power networks, telephone lines, radiofrequency, computer networks, measurement and control, etc.
- Lightning rods with ESE (Early Streamer Emission), earthing systems and continuous stand-alone earth monitoring devices.
- Design of custom solutions, project consultancy and technical training.

### INNOVATIVE SOLUTIONS

The company has since its very beginning devoted itself to innovatively developing and manufacturing quality products and complete protection solutions with the scope of fully meeting safety requirements of customers in over 40 countries worldwide.

As a part of a strong company group of peer technological companies, **CPT** takes advantage of the multiple R+D, manufacturing and LAB resources available across and throughout this electro-technical holding.

### CPT LAB

**CPT LAB** for high current discharges is a state-of-the-art surge generation lab that empowers the company to pioneer as an innovation specialist. Surge discharges of up to 150kA for standardised lightning and surge impulses (8/20 $\mu$ s & 10/350 $\mu$ s) are generated in order to test and develop solutions subject to strict commitment with **CPT's** policy of quality.





# CPS Block TVSS

## MODULAR SURGE PANELS

Cirprotec's new series of TVSS Modular Surge Protective Panels has been engineered for superior surge current ratings on the basis of its sound commitment with quality.

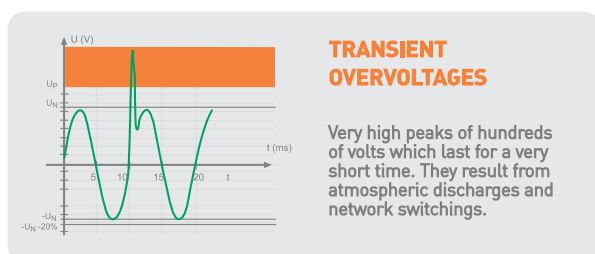
The **CPS Block** stands out above all other TVSS products thanks to the power that arises from combining an optimal overvoltage protection performance (against transients) with an innovative approach to diagnostics and maintenance.

These features as much as their benefits are individually illustrated in this guide: **IAC** Intelligent Aging Control, **MDS** Multi-Discharge System and **EPM** Efficient Preventive Maintenance.

The range of models fully covers surge ratings from 40kA to 240kA/phase. **CPS Block** surge panels are intended for installation at service-entrances, branch panels and electrical cabinets, according to IEEE & UL standards and location categories.

## TRANSIENTS

Electrical power is subject to disturbances called transients: high to very high peaks (of thousands) of volts which last for a very short time (microseconds). These split-second high voltage transients typically result from atmospheric discharges (direct and indirect lightning activity), external switching of loads or power utility grid switching and internally generated electrical overvoltages.



The significance of internal surges is not to be underestimated. Equipment such as motors and appliances, turning on and off, do actually represent a great deal of transient voltage surges reaching

values of up to 6 (and even more) times the “system peak value” (IEEE C62.41.1-2002)

In order to secure its activity against service interruptions (24x7), downtime and data losses as much as against the subsequent effects on productivity and capital assets, does virtually every single business need to protect electrical, data, telecom circuits and electronic equipment from the effects of these overvoltages.

## BEYOND THE CLASSICAL TVSS

The **CPS Block** family is a range of quality products engineered for long life with premium quality components and a robust modular construction. By recourse to its sound IEC background has **CPT** developed a product that functionally complies not only with IEEE & UL, but even with IEC standards, under tougher conditions: IEC-61643.

**CPS Block** has been designed to meet the requirements of the **3rd Edition of ULI 449**, which came into effect in 2009. The results of the tests performed according to the 3rd edition have been included in the tech sheets in this guide. They differ from that of the 2nd Edition because the system is tested with higher surge impulses. It follows that the Voltage Protection Rates (3rd. Ed.) are higher than the corresponding Clamping Voltages (2nd. Ed.).

**CPS Block** panels offer all-mode protection (L-G, N-G, L-L, N-L) with individually replaceable surge blocks (modules). And it is to a great extent on the basis of this very concept that the **CPS Block** does actually extend its functional features reaching beyond the classical TVSS approach with:

Visual diagnostics of remaining % of protection (**IAC**)

Extended discharge performance (**MDS**)

Improved MOV overcurrent security (**MDS**)

Efficient preventive maintenance (**EPM**) with surge modules being replaced per mode, rather than per phase

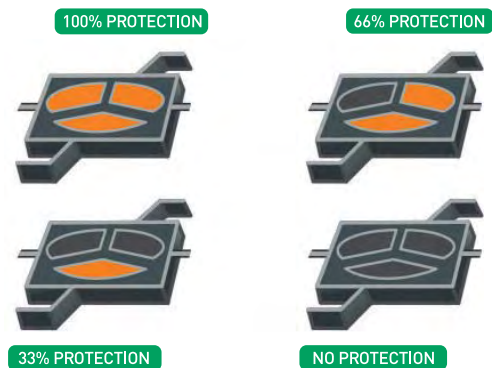
# IAC Intelligent Aging Control

## MODULE REMAINING PERCENTAGE (%) OF PROTECTION

CPS Block's surge protective modules are each made of an array of several MOV metal oxide varistors following the MDS Multi-Discharge System concept (explained on next page). MOVs are in charge of efficiently mitigating transients. Due to the very nature of discharges that are diverted to ground, varistors will inevitably tend to approach their end-of-life while carrying out their duty. It is therefore important to perform diagnosis and maintenance operations in order to guarantee that the protection will indeed be operative at the very time of a transient event. Most TVSS systems provide remote relaying over dry contacts to convey information about a phase having "run out of protection". Other TVSS products do also use a status LED per phase to inform whether it is still protected or not.

In addition to all these alarms, the **CPS Block** has been engineered to provide visual & comprehensive diagnostics with more accurate information about the remaining percentage (%) of protection per mode (L-L, L-N, N-G, L-G) rather than per phase.

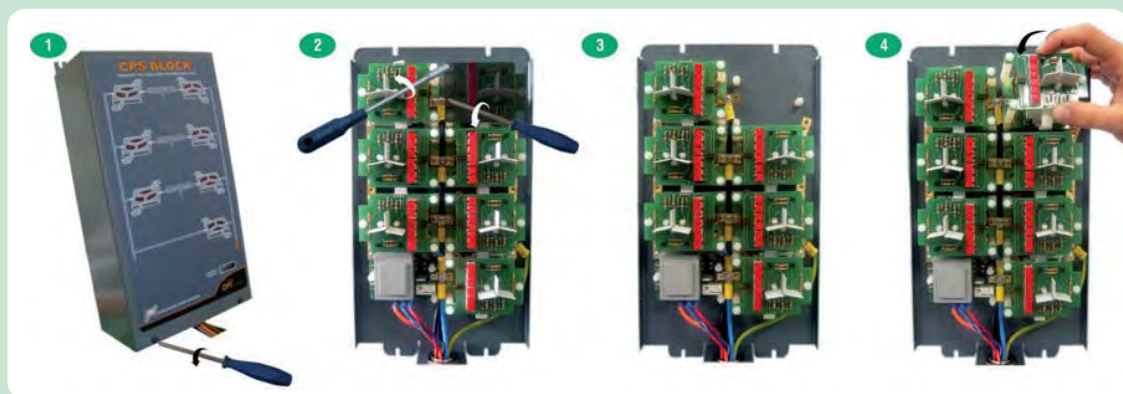
And it is actually on this basis that the need for surge module replacement can not only best be decided upon, but also in a most efficient way. It is hereby possible to replace just the module of the unprotected mode, rather than the entire protection of a phase (common mode & differential mode). And this will only be necessary if the percentage (%) of remaining protection is critical, not before: replacing the right amount at the right time means efficiency.



# EPM Efficient Preventive Maintenance

Maintenance is a key issue in TVSS systems. The modular approach is thus an investment that definitely pays, especially when using the **CPS Block**, thanks to its IAC.

Not only must the visual assessment of the remaining (%) of protection be easy, but also must the replacement of the modules be straightforward as in the **CPS Block**.



Easy replacement of Surge Blocks.

# MDS Multi-Discharge System

## INDIVIDUAL THERMAL-MECHANICAL DISCONNECTION OF EACH MOV

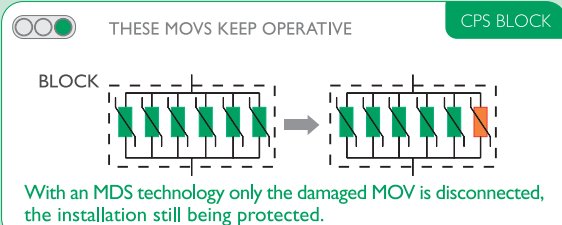
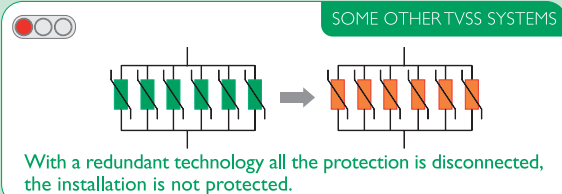
The **CPS Block** has been designed to provide high discharge rates along with high attenuation (clamping) rates of transient voltages thanks to the block concept, in which multiple varistors are arrayed together in parallel, forming a redundant protection module. Modules will protect modes (L-L, L-G, N-G, L-N) rather than phases.

IEEE C62.41 states that 10kA is a typical transient value at a service entrance. The reason why 240kA surge rates are protected against is that non-typical current magnitudes are likely to take place reaching much higher values. TVSS systems must also protect against consecutive peaks, especially because of the nature of lightning storms. It is therefore important for a TVSS to withstand multiple discharges.

TVSS systems that use redundant technology of varistors typically rely on built-in fuses to disconnect the entire module should a single MOV have reached its end-of-life getting short-circuited. Disconnection is in fact a widespread industrial safe-practice used with MOVs because of the short-circuit risk (very low) intrinsic to varistors that reach their end-of-life.

Thanks to the MDS technology, the **CPS Block** disconnects only that varistor that achieves its end-of-life.

### What happens when a MOV achieves its end of life?



This protects against short-circuit overcurrent hazard without disconnecting the entire module. The main advantage is that the rest of varistors keep protecting the loads downstream from transients. It does thus extend the protection's lifetime, efficiently using the available resources. In addition to this, it is well worth to mention that thermal-mechanical disconnection is in itself a safer disconnection than just thermal disconnection, which many other TVSS systems use.

# IEC-61643 The Heavy Duty Test

Besides functionally complying with both the 2nd and 3rd Editions of ULI 449, the CPS Block has been engineered to even comply with the **IEC-61643 Low Voltage Surge Protective Device** standard of the International Electrotechnical Commission.

IEC does in this field prescribe far more demanding tests than UL (Underwriters Laboratory) does, especially when it comes to testing the ability of the equipment to withstand the Maximum Surge Current ( $I_{max}$  in terms of IEC). Markets worldwide use this value as a key parameter to structure the range of TVSS products. ULI 449 standards do however define no test involving this parameter. It follows that:

The *Max. Surge Current* value with which many equipments are labelled, does actually constitute no real measure of robustness, not even a valid indicator. The reason is that most manufacturers cannot certificate their systems to pass the  $I_{max}$  test according to IEC-61643. Some equipments will not even withstand a single *Max. Surge Current* peak.

IEC provides a well defined protocol to proof the ability of the protector to withstand the  $I_{max}$  value. This test consists of a sequence of surge impulses 8/20  $\mu$ s, which values are scaled proportions of the  $I_{max}$  value, reaching the full  $I_{max}$  peak.

**CPS Block** has been tested to pass the  $I_{max}$  surge current test according to IEC 61643.



# More features and options

## SURGE EVENT COUNTER

This optional electromechanical surge counter is supplied along with the EMI filter in the Plus version. The system uses the induced energy from a shunted transient surge in order to update the counter. The counter does not need external or internal power supply. Reliability is thus out of question.

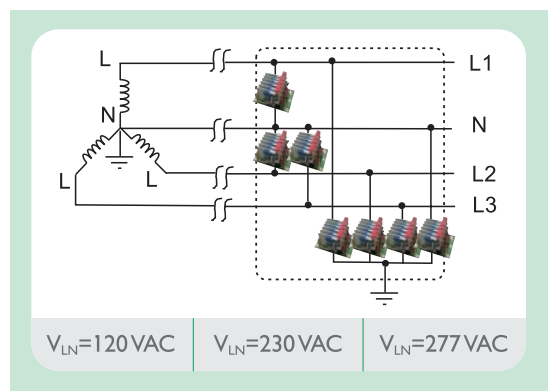


## EMI/RFI FILTER

This optional electromagnetic / radio-frequency interference filter is supplied with the Plus versions only, for suppression of disruptive electrical noise and low level transients. It follows that **CPS Block** does thus exhibit sine-wave tracking ability.

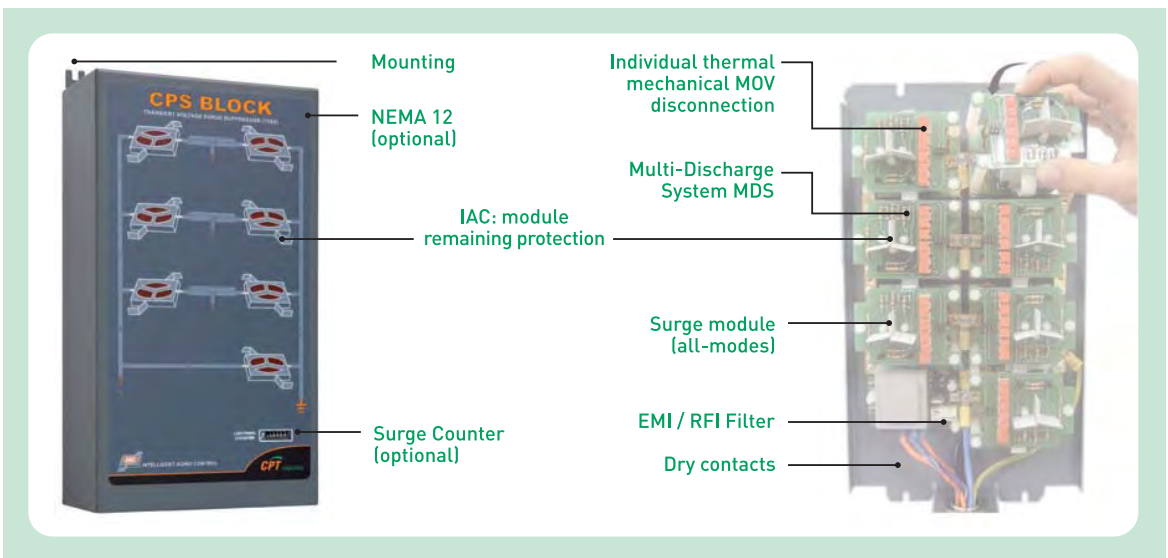
## ALL-MODE PROTECTION: BLOCKING ALL TRANSIENT PATHS

All **CPS Block** models have been designed to assure that all transient possible and probable paths are covered, protecting the wires both in common and differential mode. As opposite to other TVSS systems, the usage of 7 surge protection modules in a 3-Phase Wye or Delta network, 5 protection modules in a Split Phase network and 3 protection modules in a Single Phase configuration, will provide a relatively better clamping and transient attenuation, i.e. a residual voltage compatible with the loads downstream.



## NEMA RATED ENCLOSURE

Manufactured to the most stringent ISO Quality standards, are all **CPS Block** NEMA rated. The metal epoxy coated enclosure suits most industrial and commercial installation environments. NEMA 12 rating is supplied optionally.

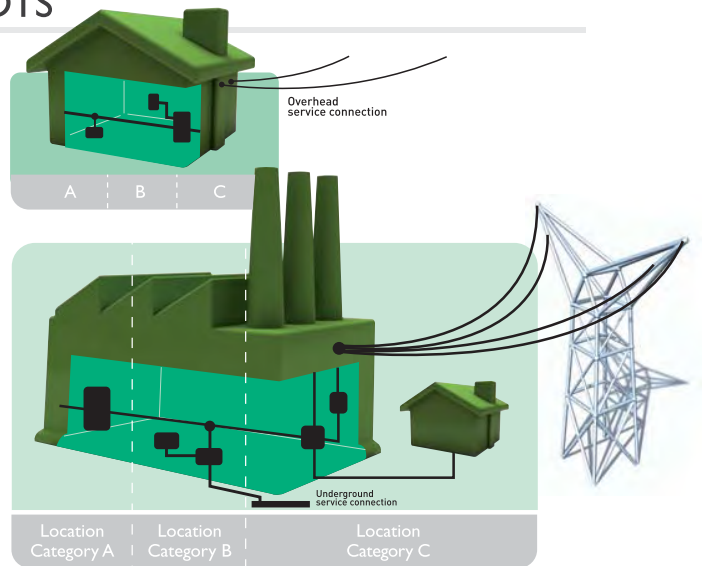


# Exposure location categories

## IDENTIFYING THE INSTALLATION SPOTS

ANSI/IEEE C62.41-2002 separates a typical facility into 3 location categories, each characterized by different exposure levels, transient shapes, voltage & current levels and transient sources. The category locations illustrated here serve as a model for explanation of where installing a high exposure **CPS Block** versus a medium or low exposure one.

When only a single location is needed (A, B or C), the clamping will sufficiently attenuate to a level for protection of the loads downstream. An additional protection location might however still be needed to cope with induction phenomena if loads are located at “large” distances, deep within a facility.



### CATEGORY C: SERVICE ENTRANCE

Category C locations are subject to heavy, externally generated impulse transients resulting from lightning, power company grid switching, power system faults and neighbouring facilities.

### CATEGORY B: DISTRIBUTION PANEL

Category B locations are subject to a mixture of externally generated impulse transients and internally generated switching and ring wave transients caused by a wide range of load equipment such as motors, manufacturing and office equipment

### CATEGORY A: BRANCH PANEL

Category A locations are subject to a high level of switching and ring wave transients caused by a wide range of load equipment such as office equipment and commercial and industrial manufacturing systems.

# Model recommendation guide

In accordance with ANSI/IEEE C62.41-2002, the table suggests **CPS Block** models taking into account transient exposure levels as well as typical applications.

IEEE Category	Exposure	CPS Block code range	I <sub>max</sub>	Description	CPT
C	Highest	77797X6Z	240kA	Large, moderate and low amperage capacity service entrances, service entrances in regions of high lightning activity, service entrances near utility substations, service entrances on grid with other large industrial users, very large distribution panels, distribution panels feeding rooftop loads in regions of high lightning activity	
C	Very High	77797X5Z	200kA		
B	High to Medium	77797X4Z	160kA	Large distribution panels, non-service entrance distribution panel boards, heavy equipment near unprotected service entrance, panels feeding variable speed drives, electronic control systems & monitoring, motor control centres using drives, PLCs, etc.	
B	Medium	77797X3Z	100kA	Branch panels loaded with sensitive electronic equipment, branch panels with no upstream protection, branch panels with sensitive and non-sensitive loads, panels feeding multiple floors with critical or sensitive loads	
A	Low to Medium	77797X2Z	80kA	Branch panels with upstream protection, branch panels with sensitive electronic equipment, branch panels deep within a facility	
A	Lowest	77797X1Z	40kA		

X=(1,2,3,4) depending on the options: surge counter, EMI filter, NEMA12 enclosure  
Z=(0 ~ 9) depending on the network configuration and voltage rating

\* this an indicative model recommendation guide

# High Exposure Series LOCATION CATEGORY C

## CPS BLOCK 240kA, 200kA Modular Surge Protective Panel (TVSS)

### Product specifications

(code range 77797X5Z & 77797X6Z)

PERFORMANCE		DIAGNOSTICS		MECHANICAL DESCRIPTION				
Maximum surge current		Mode protection status Dry contacts		Dimensions (LxWxH) & Weight				
Y=5	200kA / phase	% of protection per mode IAC (LEDs)		<b>1 Phase</b>	255x194x94	10.04x7.63x3.70	2,7	5.952
Y=6	240kA / phase	Surge Module (replacement) X=5		<b>Split Phase</b>	315x194x94	12.40x7.63x3.70	3	6.613
				<b>3 Phase WYE</b>	374x194x94	14.72x7.63x3.70	3,8	8.377
				<b>3 Phase DELTA</b>	374x194x94	14.72x7.63x3.70	3,8	8.377
				<b>High Leg DELTA</b>	374x194x94	14.72x7.63x3.70	3,8	8.377
				Operating Temperature	[-40° to 70°]C		[-40° to 158°]F	
				Operating Humidity	0% to 95% non condensing humidity			
				Altitude	4,000 m	13,000 feet		
				Connecting Wire Size	6 sq mm; #10 AWG			
				Internal Fusing	MDS Individually fused MOVs (thermal-mechanical)			
				Enclosure	Metal coated with epoxy			
				Connection Type	Parallel connected			

STANDARD FEATURES		OPTIONS	
Intelligent Aging Control (IAC)		EMI/RFI Filter * [-40db]	X=2,4
Multi-Discharge System (MDS)		Surge Counter	X=2,4
Efficient Preventive Maintenance (EPM)		NEMA 12 / IP55	X=3,4
All Mode Protection (L-N, L-G, N-G, L-L)		* sine-wave tracking	

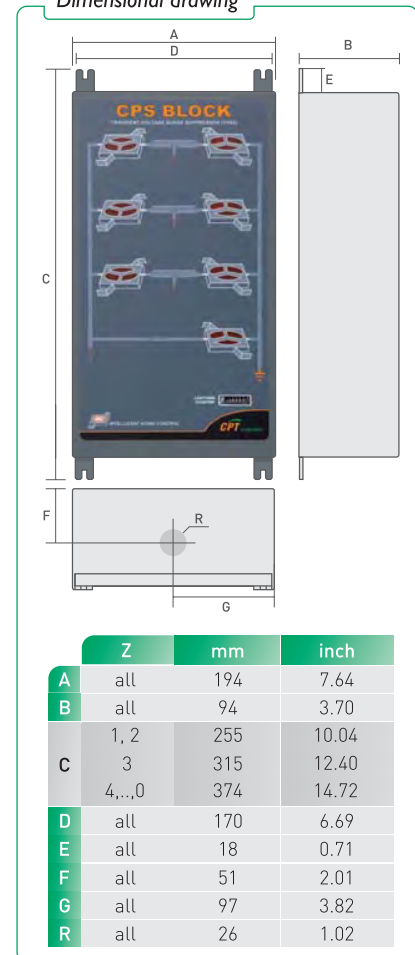
WARRANTY		STANDARDS *	
10 years		UL 1449 2nd Edition & 3rd Edition	
CE marked		IEEE C62.41.1-2002	
		IEEE C62.41.2-2002	
		IEC 61643	

\* according to

### Specification data:

TVSS modular surge protection panel for all mode protection (L-G, N-G, L-N, L-L) against transient surges according to UL 1449 2nd Edition & 3rd Edition, IEC-61643, IEEE C.62.41.1 & C.62.41.2 2002 and IEC. Surge modules are replaceable per mode, Models available for all network configurations and voltage ratings with a max. surge current protection of either 200kA or 240 kA per phase depending on the range. It is thus recommended for installation at an IEEE "C location category", typically a service entrance. Models are equipped with following technologies: IAC Intelligent Aging Control (module remaining % of protection), MDS Multi-Discharge System (thermal-mechanical disconnection of each MOV) and EPM Efficient Preventive Maintenance (replacement of surge modules). Remote diagnostics is standard (dry contacts). Optional features are: EMI/RFI filter (a.k.a. sine-wave tracking), Surge Counter and NEMA 12 rated enclosure.

### Dimensional drawing



SYSTEM DESCRIPTION			CLAMPING VOLTAGE UL1449 2nd Edition				VOLTAGE PROTECTION RATE UL1449 3rd Edition				
Z	Network	V(L-N)	L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L	
200kA & 240kA	1	1 Phase	120V	400	400	400	800	600	600	600	1200
	2	1 Phase	230V	800	800	800	1600	1200	1200	1200	2400
	3	Split Phase	120V	400	400	400	800	600	600	600	1200
	4	3 Phase WYE	120V	400	400	400	800	600	600	600	1200
	5	3 Phase WYE	230V	800	800	800	1600	1200	1200	1200	2400
	6	3 Phase WYE	277V	800	800	800	1600	1200	1200	1200	2400
	7	3 Phase DELTA	240V	800	800	800	1600	1200	1200	1200	2400
	8	3 Phase DELTA	400V	800	800	800	1600	1200	1200	1200	2400
	9	3 Phase DELTA	480V	950	950	950	1900	1425	1425	1425	2850
	0	High Leg DELTA	120V	800	800	800	1600	1200	1200	1200	2400
Options	X=2,4	EMI/RFI Filter* [-40db]	* sine-wave tracking				* sine-wave tracking				
	X=2,4	Surge Counter									
	X=3,4	NEMA 12 / IP 55 Enclosure									



# Medium Exposure Series LOCATION CATEGORY B

## CPS BLOCK 160kA, 100kA Modular Surge Protective Panel (TVSS)

### Product specification

(code range 77797X3Z & 77797X4Z)

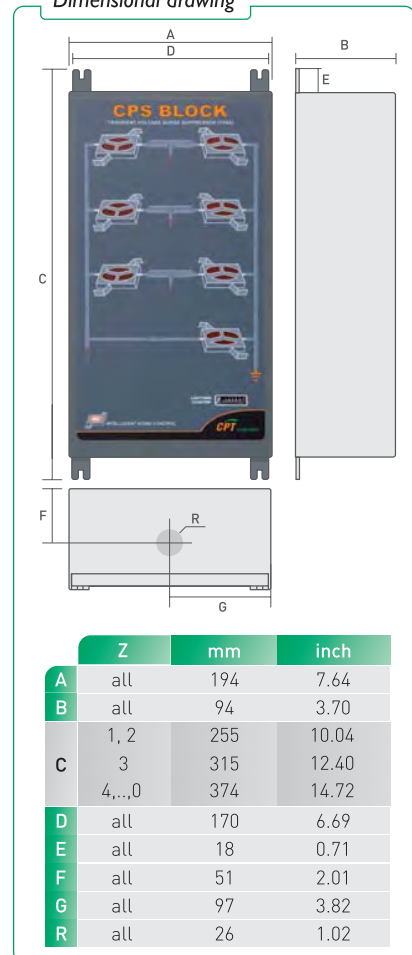
PERFORMANCE		DIAGNOSTICS		MECHANICAL DESCRIPTION				
Maximum surge current		Mode protection status Dry contacts		Dimensions (LxWxH) & Weight				
Y=3	100kA / phase	% of protection per mode IAC (LEDs)		<b>1 Phase</b>	255x194x94	10.04x7.63x3.70	2,7	5.952
Y=4	160kA / phase	Surge Module (replacement) X=5		<b>Split Phase</b>	315x194x94	12.40x7.63x3.70	3	6.613
				<b>3 Phase WYE</b>	374x194x94	14.72x7.63x3.70	3,8	8.377
				<b>3 Phase DELTA</b>	374x194x94	14.72x7.63x3.70	3,8	8.377
				<b>High Leg DELTA</b>	374x194x94	14.72x7.63x3.70	3,8	8.377
				Operating Temperature	[-40° to 70°]C		[-40° to 158°]F	
				Operating Humidity	0% to 95% non condensing humidity			
				Altitude	4,000 m	13,000 feet		
				Connecting Wire Size	6 sq mm; #10 AWG			
				Internal Fusing	MDS Individually fused MOVs (thermal-mechanical)			
				Enclosure	Metal coated with epoxy			
				Connection Type	Parallel connected			
STANDARD FEATURES		OPTIONS						
Intelligent Aging Control (IAC)		EMI/RFI Filter * [-40db] X=2,4						
Multi-Discharge System (MDS)		Surge Counter X=2,4						
Efficient Preventive Maintenance (EPM)		NEMA 12 / IP55 X=3,4						
All Mode Protection (L-N, L-G, N-G, L-L)				* sine-wave tracking				
WARRANTY		STANDARDS *						
10 years		UL 1449 2nd Edition & 3rd Edition						
CE marked		IEEE C62.41.1-2002						
		IEEE C62.41.2-2002						
		IEC 61643						

\* according to

### Specification data:

TVSS modular surge protection panel for all mode protection (L-G, N-G, L-N, L-L) against transient surges according to UL 1449 2nd Edition & 3rd Edition, IEC-61643, IEEE C.62.41.1 & C.62.41.2 2002 and IEC. Surge modules are replaceable per mode. Models available for all network configurations and voltage ratings with a max. surge current protection of either 100kA or 160kA per phase depending on the range. It is thus recommended for installation at an IEEE "B location category", typically a distribution panel. Models are equipped with following technologies: IAC Intelligent Aging Control (module remaining % of protection), MDS Multi-Discharge System (thermal-mechanical disconnection of each MOV) and EPM Efficient Preventive Maintenance (replacement of surge modules). Remote diagnostics is standard (dry contacts). Optional features are: EMI/RFI filter (a.k.a. sine-wave tracking), Surge Counter and NEMA 12 rated enclosure.

### Dimensional drawing



SYSTEM DESCRIPTION			CLAMPING VOLTAGE UL1449 2nd Edition				VOLTAGE PROTECTION RATE UL1449 3rd Edition				
Z	Network	V(L-N)	L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L	
200kA & 240kA	1	1 Phase	120V	400	400	400	800	600	600	600	1200
	2	1 Phase	230V	800	800	800	1600	1200	1200	1200	2400
	3	Split Phase	120V	400	400	400	800	600	600	600	1200
	4	3 Phase WYE	120V	400	400	400	800	600	600	600	1200
	5	3 Phase WYE	230V	800	800	800	1600	1200	1200	1200	2400
	6	3 Phase WYE	277V	800	800	800	1600	1200	1200	1200	2400
	7	3 Phase DELTA	240V	800	800	800	1600	1200	1200	1200	2400
	8	3 Phase DELTA	400V	800	800	800	1600	1200	1200	1200	2400
	9	3 Phase DELTA	480V	950	950	950	1900	1425	1425	1425	2850
	0	High Leg DELTA	120V	800	800	800	1600	1200	1200	1200	2400
Options	X=2,4	EMI/RFI Filter* [-40db]	* sine-wave tracking				* sine-wave tracking				
	X=2,4	Surge Counter									
	X=3,4	NEMA 12 / IP 55 Enclosure									

# Low Exposure Series LOCATION CATEGORY A

## CPS BLOCK 80kA, 40kA Modular Surge Protective Panel (TVSS)

### Product specification

(code range 77797X1Z & 77797X2Z)

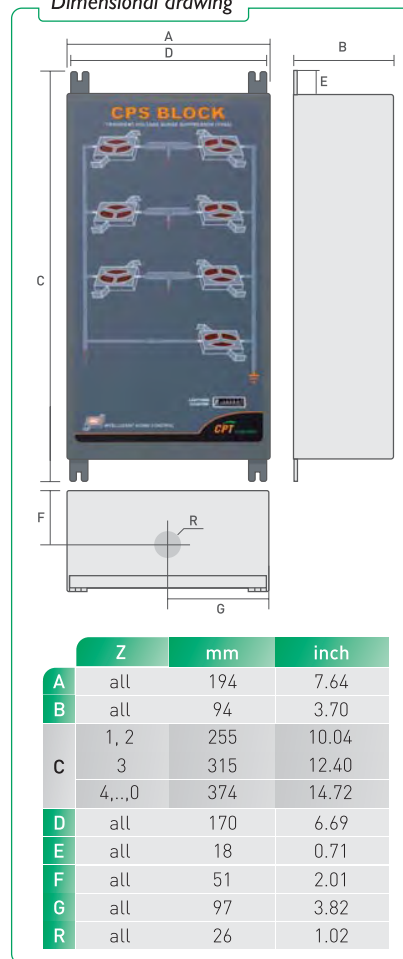
PERFORMANCE		DIAGNOSTICS		MECHANICAL DESCRIPTION				
Maximum surge current		Mode protection status Dry contacts		Dimensions (LxWxH) & Weight				
Y=1	40kA / phase	% of protection per mode IAC (LEDs)		<b>1 Phase</b>	255x194x94	10.04x7.63x3.70	2,7	5,952
Y=2	80kA / phase	Surge Module (replacement) X=5		<b>Split Phase</b>	315x194x94	12.40x7.63x3.70	3	6,613
				<b>3 Phase WYE</b>	374x194x94	14.72x7.63x3.70	3,8	8,377
				<b>3 Phase DELTA</b>	374x194x94	14.72x7.63x3.70	3,8	8,377
				<b>High Leg DELTA</b>	374x194x94	14.72x7.63x3.70	3,8	8,377
<b>STANDARD FEATURES</b>		<b>OPTIONS</b>		Operating Temperature				
Intelligent Aging Control (IAC)		EMI/RFI Filter * [-40db] X=2,4		[-40° to 70°]C				
Multi-Discharge System (MDS)		Surge Counter X=2,4		Operating Humidity				
Efficient Preventive Maintenance (EPM)		NEMA 12 / IP55 X=3,4		0% to 95% non condensing humidity				
All Mode Protection (L-N, L-G, N-G, L-L)				Altitude				
				4,000 m				
				13,000 feet				
				Connecting Wire Size				
				6 sq mm; #10 AWG				
				Internal Fusing				
				MDS Individually fused MOVs (thermal-mechanical)				
				Enclosure				
				Metal coated with epoxy				
				Connection Type				
				Parallel connected				
<b>WARRANTY</b>		<b>STANDARDS *</b>						
10 years		UL 1449 2nd Edition & 3rd Edition						
CE marked		IEEE C62.41.1-2002						
		IEEE C62.41.2-2002						
		IEC 61643						

\* according to

### Specification data:

TVSS modular surge protection panel for all mode protection (L-G, N-G, L-N, L-L) against transient surges according to UL 1449 2nd Edition & 3rd Edition, IEC 61643, IEEE C.62.41.1 & C.62.41.2 2002 and IEC. Surge modules are replaceable per mode. Models available for all network configurations and voltage ratings with a max. surge current protection of either 40kA or 80kA per phase depending on the range. It is thus recommended for installation at an IEEE "A location category", typically a branch panel. Models are equipped with following technologies: IAC Intelligent Aging Control (module remaining % of protection), MDS Multi-Discharge System (thermal-mechanical disconnection of each MOV) and EPM Efficient Preventive Maintenance (replacement of surge modules). Remote diagnostics is standard (dry contacts). Optional features are: EMI/RFI filter (a.k.a. sine-wave tracking), Surge Counter and NEMA 12 rated enclosure.

### Dimensional drawing



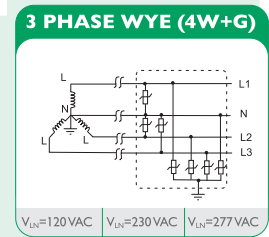
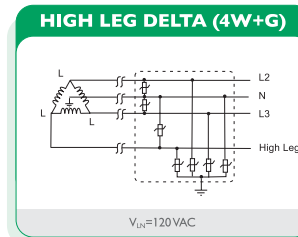
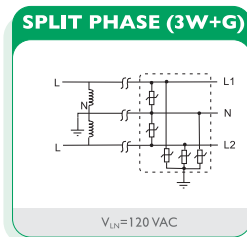
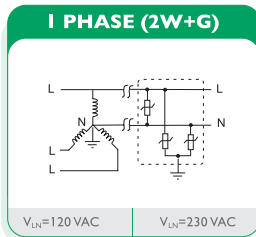
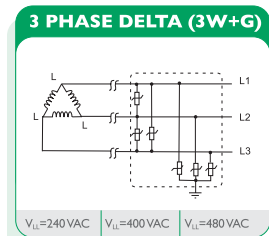
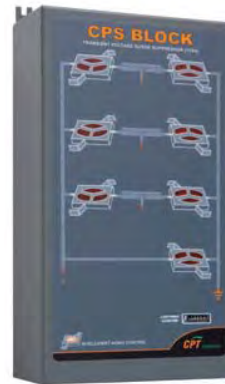
SYSTEM DESCRIPTION			CLAMPING VOLTAGE UL1449 2nd Edition				VOLTAGE PROTECTION RATE UL1449 3rd Edition				
Z	Network	V(L-N)	L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L	
200kA & 240kA	1	1 Phase	120V	400	400	400	800	600	600	600	1200
	2	1 Phase	230V	800	800	800	1600	1200	1200	1200	2400
	3	Split Phase	120V	400	400	400	800	600	600	600	1200
	4	3 Phase WYE	120V	400	400	400	800	600	600	600	1200
	5	3 Phase WYE	230V	800	800	800	1600	1200	1200	1200	2400
	6	3 Phase WYE	277V	800	800	800	1600	1200	1200	1200	2400
	7	3 Phase DELTA	240V	800	800	800	1600	1200	1200	1200	2400
	8	3 Phase DELTA	400V	800	800	800	1600	1200	1200	1200	2400
	9	3 Phase DELTA	480V	950	950	950	1900	1425	1425	1425	2850
	0	High Leg DELTA	120V	800	800	800	1600	1200	1200	1200	2400
Options	X=2,4	EMI/RFI Filter* [-40db]	* sine-wave tracking				* sine-wave tracking				
	X=2,4	Surge Counter									
	X=3,4	NEMA 12 / IP 55 Enclosure									

# CPS Block ordering guideline

## NETWORK CONFIGURATION AND VOLTAGE RATING

Besides choosing the model in terms of level of exposure and type of application, it is also required to identify the electrical network configuration and desired voltage rating.

The size of the box and the number of protection modules (blocks) does actually depend only on the network configuration



## CPS BLOCK ORDERING GUIDELINE

In order to specify the appropriate model, please compose your **CPS Block** reference number 77797XYZ defining the right values for the X, Y, Z parameters following these tables.

Reference:

777 97 **XYZ**

Y	Imax/Phase	IEEE Location Category
1	40 kA	A
2	80 kA	A
3	100 kA	B
4	160 kA	B
5	200 kA	C
6	240 kA	C

X	Version	Surge Counter	EMI Filter	NEMA 12	All Mode (CM+DM)	IAC	MDS	EPM
1	Basic	✗	✗	✗	✓	✓	✓	✓
2	Plus	✓	✓	✗	✓	✓	✓	✓
3	NEMA	✗	✗	✓	✓	✓	✓	✓
4	NEMA Plus	✓	✓	✓	✓	✓	✓	✓
5	Surge Replacement Module							

Z	Network	VLN
1	1 Phase	120V
2	1 Phase	230V
3	Split Phase	120V
4	3 Phase WYE	120V
5	3 Phase WYE	230V
6	3 Phase WYE	277V
7	3 Phase DELTA	240V
8	3 Phase DELTA	400V
9	3 Phase DELTA	480V
0	High Leg DELTA	120V



[www.cirprotec.com](http://www.cirprotec.com)

50080140v1 - D.L.B. - 18.889 - 2009



**CIRPROTEC, S.L.**

Lepant, 49 - 08223 Terrassa · BARCELONA - Spain · Tel. +34 93 733 16 84 - Fax. +34 93 733 27 64 · [export@cirprotec.com](mailto:export@cirprotec.com)