

# MULTI-STAGE Surge Protection

## CLASS I+II+III

Innovated Multi-Stage Surge Protection  
Single & Three Phase Modular  
Installation - Hard Wire

Cascade bi-directional EMI-RFI filtering  
of phase (L) and neutral (N) wire

IEC61643-1 Class I+II+III; IEC60939-2

Mobile Base Station

Telecommunication

Broadcast

Computers

Sensitive Electronic

Medical Equipment

 **Surge**  
Protection



CLASS I+II+III



Military

Industrial

Residential

## Hard Wire Installation

### Eight (8) Stages Surge Protector

NEW INNOVATION APPROACH TO SURGE PROTECTION



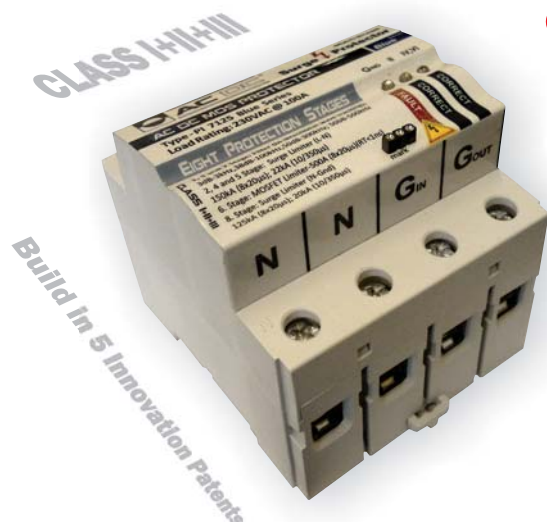
**. . . We Care for Safety of Your Electronic Devices**



## ACDC SURGE PROTECTOR

### EIGHT (8) STAGES SERIES PROTECTOR 1/1 & 3/3

#### HARD WIRE INSTALLATION - MODULAR SYSTEM



NEW!



### Type-PI (780; 7100; 7125; 7200) Green Series

Single Phase / Three Phase CLASS I+II+III

Voltage Rating: 120VAC / 230VAC / 400VAC

Current Rating: up to 100A per phase

Response Time: < 1ns



### ACDC Surge Protector Type- PI Series

is specifically designed to protect, upgrade and improve functioning of computers, telecommunication, medical, audio, video and all sensitive electronic equipment.

High current capability, up to 100A, makes these protectors ideal equally for low power sensitive electrical devices and for industrial application.

### EASIER SIMPLER BETTER

Implementation of ACDC Surge Protectors is simple and easy. Regarding multi-stage design of Class I+II+III in one unit with ACDC Surge Protectors is expel need of several surge protectors installed separately in each boundary protection zone (LPZ0a/LPZ0b-LPZ3 & C-A acc. IEC62305-4 & ANSI/IEEE C62.41.1-2)

With simple words, design and planning of surge protection is not any more reserved just for experts in this field. It become simple and applicable to wide branch of professions: electrician, const. builders, IT..

### ACDC Surge Protector Type - PI (780; 7100; 7125; 7200) Green Series

is advanced multi-stage surge protector consists of 8 (eight) & 100A protection stages that provides effective and reliable protection against surges and transients. The protection device have high grade cascade bi-directional EMI/RFI filtering of phase (L) and neutral (N) wire and special diagnostic for ground condition.

**Application:** The scope of applications of ACDC Surge Protectors is quite wide and refers to the protection of electrical devices against impulse surge and high-frequency (electromagnetic) disturbance, oscillation, speaks in network power supply and atmospheric discharge. ACDC protectors have high-grade bidirectional filtering. They are tracking AC waveform eliminating so-called pollution in power AC supply.

These protectors have special design to protect and improve functioning of sophisticate equipment in Telecommunications, Broadcast, Medical equipment, Computers, Military, Solar Photovoltaic and Residential.

**Technical Specifications:** The basic module of type ACDC Surge Protector - Green Series is 8 (eight) stages Single Phase Protector with modular configuration for single or three phase applications for load currents of up to 100A (22kW) per phase.

**Investment:** Installation of ACDC Surge Protector type - PI is excellent choice for investment in the quality of your power network supply, extended equipment life and reduce their down time and errors.

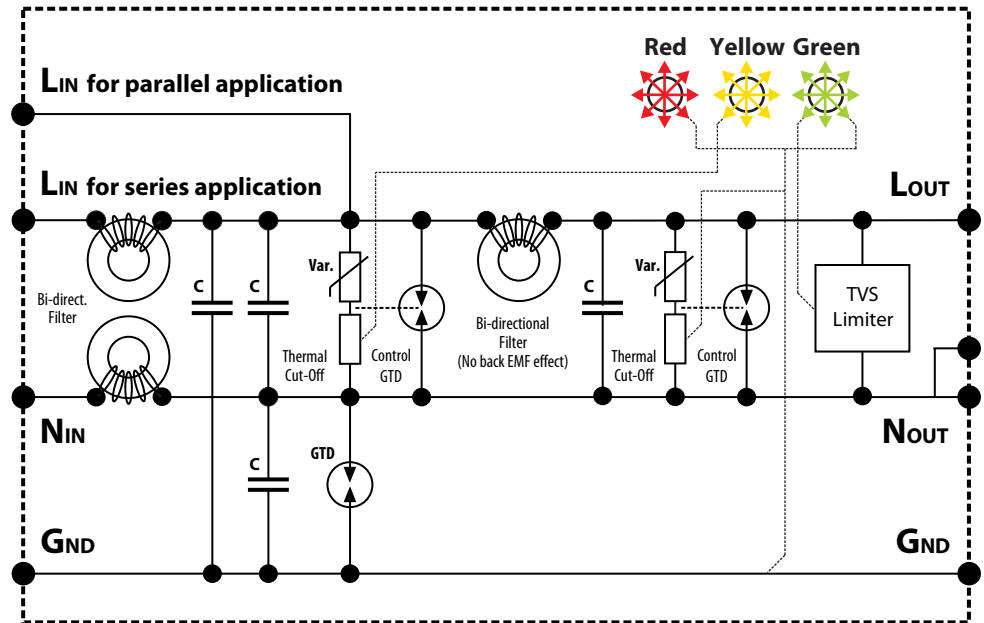
**Reliability:** If the stages 2,4 and 6 are out of function, the stages 1,3 and 7 are still provide a high grade cascade bi-directional filtering along with ultimate (5-th) protection stage.



## EIGHT PROTECTION STAGES:

Cascade bi-directional EMI-RFI filtering of phase (L) and neutral (N) wire

### Basic Circuit Diagram per Phase - Green Series:



### ACDC Surge Protector Type-PI Green Series

**Philosophy:** The ACDC Surge Protectors have coordinated approach to lightning protection, surge and transient protection as well as grounding, an approach that embraces all aspects of potential damage. No single technology can effectively protect electronic devices from the damaging effects of lightning and induced transients, which can severely damage or destroy electronic systems.

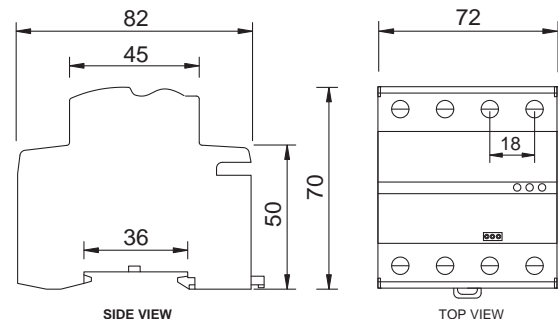
In order to provide the optimum level of protection, ACDC has developed integrate 8 (eight) stages Surge protector that provides effective and reliable protection against surges and transients.

**Approach:** ACDC Surge Protectors provides a systematic approach on two fronts: Surge protection and Bi-directional filtration. While there are companies and products that attempt one of these, ACDC Surge Protectors is the only product that seamlessly merges the two technologies. The unique multi-stage design provides the most advanced power filter protector.

**Technology:** ACDC Surge Protector Type-PI Green Series is protector of class I+II+III in one according to IEC61643. They also full fill standard requirements for electromagnetic (radio) interference IEC60939-2.

**Design:** The integrated modular design for single or three phase applications allow easy installation on place where surge protection are needed.

**Installation:** The ACDC Surge Protector - Green Series could be install in series or parallel configuration depending of total load (>100A<). The place of installation could be Main Circuit Board (MCB) or Sub Distribution Board (SDB).



### Innovation Approach to Surge Protection

ACDC Multi-Stage Surge Protectors have built-in five (5) patents and use four (4) complementary different protection technologies, (Varistor, Gas Tube, Nanocrystalline Cores and TVS technology) in one unit. That result with reducing the surge current up to 99.9% at single point.

**T**his characteristic can not offer competitive surge products and present a fundamental improvement in Surge Protection technology. Implementation of ACDC Surge Protectors are simple and applicable for professions such as planners, construction engineers, designers, electricians and others.



## Technical Specification per Phase ACDC Surge Protector - Green Series

Type	Type PI 780 - GS	Type PI 7100 - GS	Type PI 7125 - GS	Type PI 7200 - GS
Order Code	800.115	800.116	800.117	800.118
Total Surge Current	Surge Cur. 105kA (8/20µs) or 15kA (10/350µs)	Surge Cur. 125kA (8/20µs) or 18kA (10/350µs)	Surge Cur. 150kA (8/20µs) or 22kA (10/350µs)	Surge Cur. 225kA (8/20µs) or 32kA (10/350µs)
Product Standard	IEC61643-1 Class I+II+III (B+C+D); IEC60939-2			
<b>1. Stage</b>	<b>First Protection Stage</b>			
Function	Bi-directional filtering EMI/RFI (L-N); Front signal edge reduction			
Technical Specification	L=0.7mH; I <sub>max</sub> =up to 100A			
Technology	Nano Crystalline Core (L-C configuration)			
<b>2. Stage</b>	<b>Second Protection Stage</b>			
Function	Suppression signal shape (L-N), 8/20µs or 10/350µs			
Technical Specification	Surge Cur. 80kA (8/20µs) or 12,5kA (10/350µs)	Surge Cur. 100kA (8/20µs) or 15kA (10/350µs)	Surge Cur. 125kA (8/20µs) or 20kA (10/350µs)	Surge Cur. 200kA (8/20µs) or 30kA (10/350µs)
Technology	Varistor with thermal cut-off, Control Gas Tube Discharge			
<b>3. Stage</b>	<b>Third Protection Stage</b>			
Function	Bi-directional filtering EMI/RFI (L-N); Front signal edge reduction			
Technical Specification	L=4.2mH; I <sub>max</sub> =up to 100A			
Technology	Nano Crystalline Core (L-C configuration)			
<b>4. Stage</b>	<b>Fourth Protection Stage</b>			
Function	Suppression signal shape (L-N), 8/20µs			
Technical Specification	Surge Cur. 25kA (8/20µs)			
Technology	Varistor with thermal cut-off			
<b>5. Stage</b>	<b>Fifth Protection Stage</b>			
Function	Long term signal suppression from 1µs to 2 sec.			
Technical Specification	This stage is the last ultimate protection level. He switch-off the circuits breaker install upstream, if the pick voltage > 300VDC for (120 VAC) or 520VDC for (230 VDC) appears on the output. Circuits breaker should be < 250A gI/gG.			
Technology	Controlled Gas Tube Discharge			
<b>6. Stage</b>	<b>Sixth Protection Stage</b>			
Function	High speed efficiency signal suppression			
Technical Specification	TVS Limiter 500A (8/20µs); Typical response < 1nsec (nanosecond)			
Technology	Transient Voltage Suppressor			
<b>7. Stage</b>	<b>Seventh Protection Stage</b>			
Function	Bi-directional filtering EMI/RFI (N-L); Front signal edge reduction			
Technical Specification	L=0.7mH; I <sub>max</sub> =up to 100A			
Technology	Nano Crystalline Core (L-C configuration)			
<b>8. Stage</b>	<b>Eight Protection Stage</b>			
Function	Suppression signal shape (N-Gnd), 8/20µs or 10/350µs			
Technical Specification	Surge Cur. 80kA (8/20µs) or 12,5kA (10/350µs)	Surge Cur. 100kA (8/20µs) or 15kA (10/350µs)	Surge Cur. 125kA (8/20µs) or 20kA (10/350µs)	Surge Cur. 200kA (8/20µs) or 30kA (10/350µs)
Technology	Controlled Gas Tube Discharge			



## Single and Three phase Models - ACDC Surge Protectors - Green Series

### Guideline for ordering of ACDC Surge Protectors of Green Series

Technology:	Multi-Stage Surge Protection; Eight (8) Stages Series Protector
Specification:	Cascade bi-directional EMI-RFI filtering of phase (L) and neutral (N) wire
Load:	Up to 100A per phase; 12kW per phase for 120VAC; 22kW per phase for 230VAC
Options:	Indication for bed grounding, remote alarm
Installation:	Hard wire installation - Modular System
Product Standard:	IEC61643-1 Class I+II+III; IEC60939-2

### Single Phase

For upgrade the distribution panel



Type	Order Code	Total Surge Cur.	Dimension (WxDxHmm)	Weight (kg)
Type-PI 780 1/1-GS	800.115-1/1	105kA(8/20μs) or 15kA(10/350μs)	82x72x70	0,47
Type-PI 7100 1/1-GS	800.116-1/1	125kA (8/20μs) or 18kA (10/350μs)	82x72x70	0,47
Type - PI 7125 1/1-GS	800.117-1/1	150kA (8/20μs) or 22kA (10/350μs)	82x72x70	0,47
Type - PI 7200 1/1-GS	800.118-1/1	225kA (8/20μs) or 32kA (10/350μs)	82x72x70	0,47

### Three Phase

For upgrade the distribution panel

Three single phase surge protectors connected for three phase application



Type	Order Code	Total Surge Cur.	Dimension (WxDxHmm)	Weight (kg)
Type-PI 780 1/1-GS x 3	800.115-1/1 x 3	315kA(8/20μs) or 45kA(10/350μs)	82x216x70	1,41
Type-PI 7100 1/1-GS x 3	800.116-1/1 x 3	375kA (8/20μs) or 54kA (10/350μs)	82x216x70	1,41
Type - PI 7125 1/1-GS x 3	800.117-1/1 x 3	450kA (8/20μs) or 66kA (10/350μs)	82x216x70	1,41
Type - PI 7200 1/1-GS x 3	800.118-1/1 x 3	675kA (8/20μs) or 96kA (10/350μs)	82x216x70	1,41

### Three Phase

The Surge Protectors are installed in Metal Distribution board with degree of protection IP54



Type	Order Code	Total Surge Cur.	Dimension (WxDxHmm)	Weight (kg)
Type-PI 780 3/3-M-GS	800.115-3/3-M	315kA(8/20μs) or 45kA(10/350μs)	250x250x150	5,1
Type-PI 7100 3/3-M-GS	800.116-3/3-M	375kA (8/20μs) or 54kA (10/350μs)	250x250x150	5,1
Type - PI 7125 3/3-M-GS	800.117-3/3-M	450kA (8/20μs) or 66kA (10/350μs)	250x250x150	5,1
Type - PI 7200 3/3-M-GS	800.118-3/3-M	675kA (8/20μs) or 96kA (10/350μs)	250x250x150	5,1

### Three Phase

The Surge Protectors are installed in Metal Distribution board with degree of protection IP54  
Circuit breakers MCB 100A are installed in the front of protectors for each phase















Type	Order Code	Total Surge Cur.	Dimension (WxDxHmm)	Weight (kg)
Type-PI 780 3/3-MCB-GS	800.115-3/3-MCB	315kA(8/20μs) or 45kA(10/350μs)	300x250x150	7,1
Type-PI 7100 3/3-MCB-GS	800.116-3/3-MCB	375kA (8/20μs) or 54kA (10/350μs)	300x250x150	7,1
Type - PI 7125 3/3-MCB-GS	800.117-3/3-MCB	450kA (8/20μs) or 66kA (10/350μs)	300x250x150	7,1
Type - PI 7200 3/3-MCB-GS	800.118-3/3-MCB	675kA (8/20μs) or 96kA (10/350μs)	300x250x150	7,1

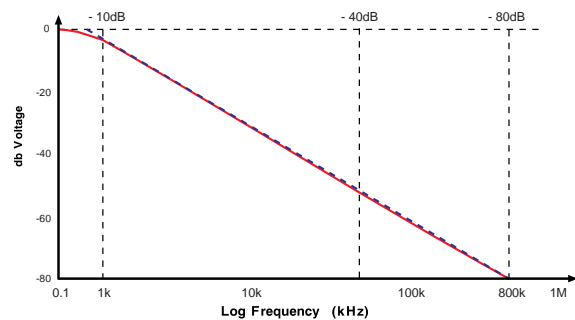
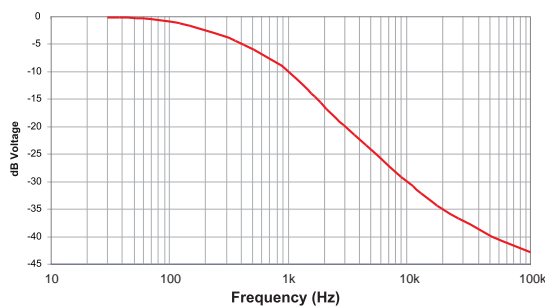
\* The Surge Protectors from series Type-PI 3/3-MCB-GS are delivered with phase and neutral filtering as model basic option. By customer request the model could be delivered for installation without neutral filtering or for parallel installation with additional mark WNF or P

[www.acdc-dcac.eu](http://www.acdc-dcac.eu)

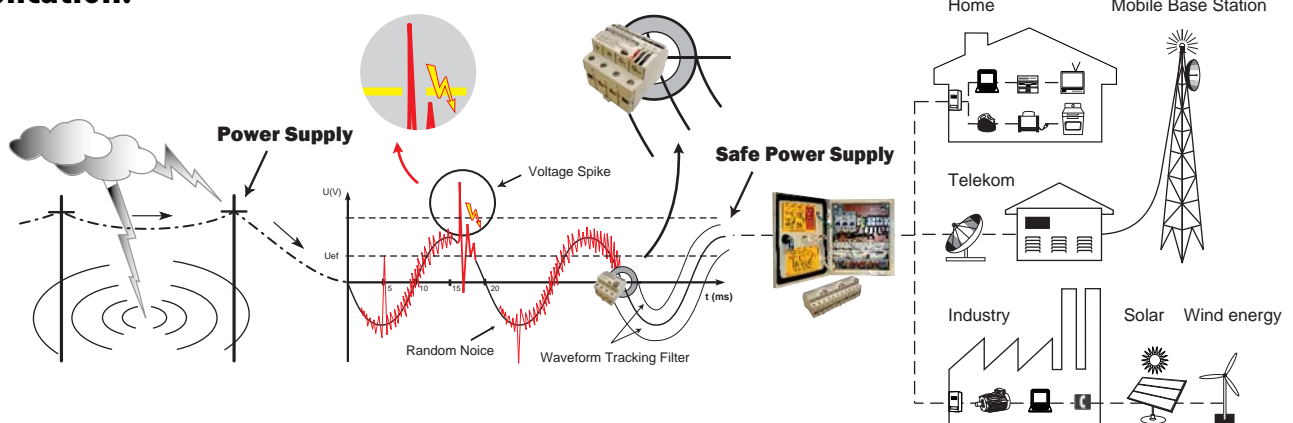
## Operation Diagnostic System

Normal:	Red	Yellow	Green	
Continuous yellow and green				Led Indication for correct stage no. 2,4 and 6. The stages no. 1,3 and 7 (high garde bi-directional filtering) are always in function along with ultimate (5-th) protection stage.
Fault:				
Continuous green				Led Indication for correct stage no. 4,6 and un correct no 2. The stages no. 1,3 and 7 (bi-directional filtering) are always in function along with ultimate (5-th) protection stage.
Fault:				
Blinking red				Led Indication for bed grounding (Low impedance equipotential ground is not provided)
Fault:				
Continuous red				Only stages 1,3 and 7 are still in function along with ultimate (5-th) protection stage.

## Frequency attenuation:



## Application:



### Applications:

Telecommunication  
Computers  
Medical equipment  
Sensitive electronic  
Solars  
Industrial grade  
Military

### Features:

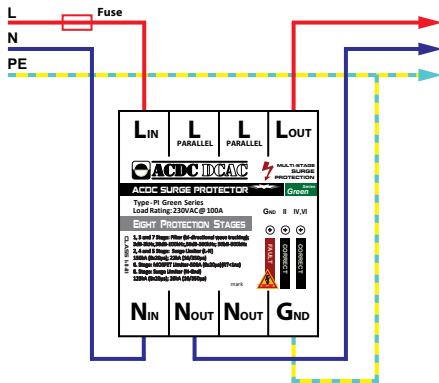
Multi - Stage Surge Protection  
Eight (8) Protection Stages  
Bi-directional Filtering  
Ground Filtering  
Thermal Circuit Protection  
High Reliability  
Excellent Response Time < 1ns

Certificate of Quality    ISO 9001:2008  
Varistors Standard      IEC 61643-1; UL 1449  
Elect. Magn. Interfer.   IEC 60939-2  
Protec. Standard acc.    IEC 61643-1 Class I+II+III

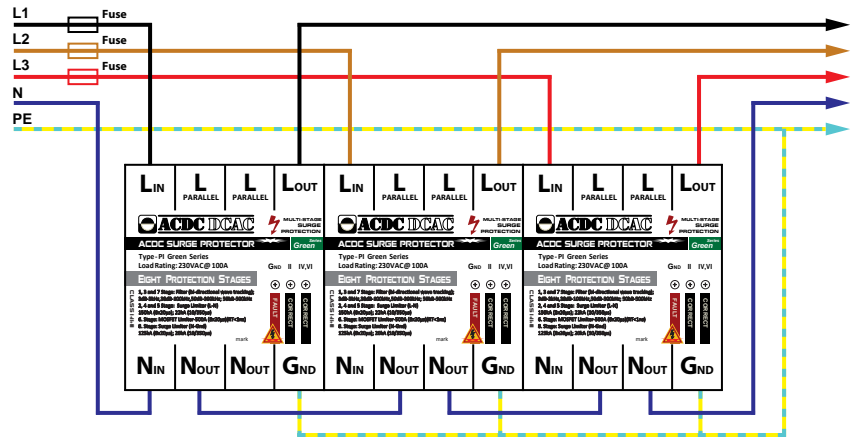


## Installation Instruction for TN-C-S, TN-S and TT distribution system

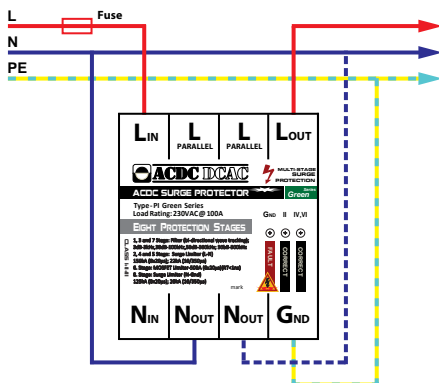
### SERIES - Single Phase Installation with phase (L) and neutral (N) filtering



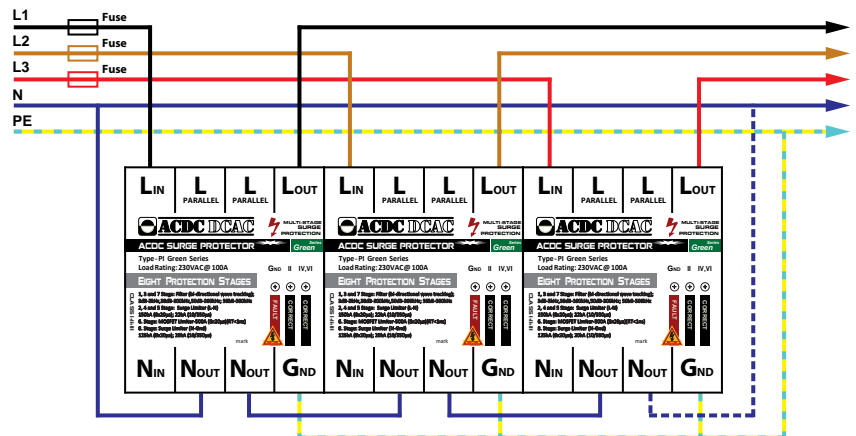
### SERIES - Three Phase Installation with phase (L) and neutral (N) filtering



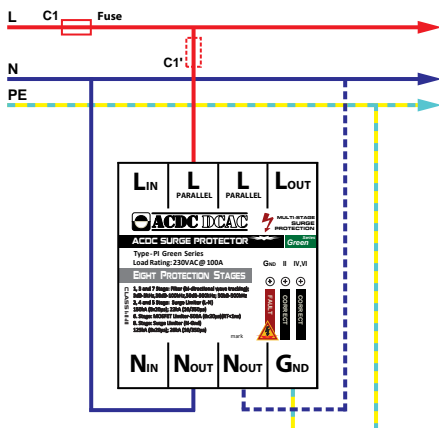
### SERIES - Single Phase Installation with phase (L) and without neutral (N) filtering



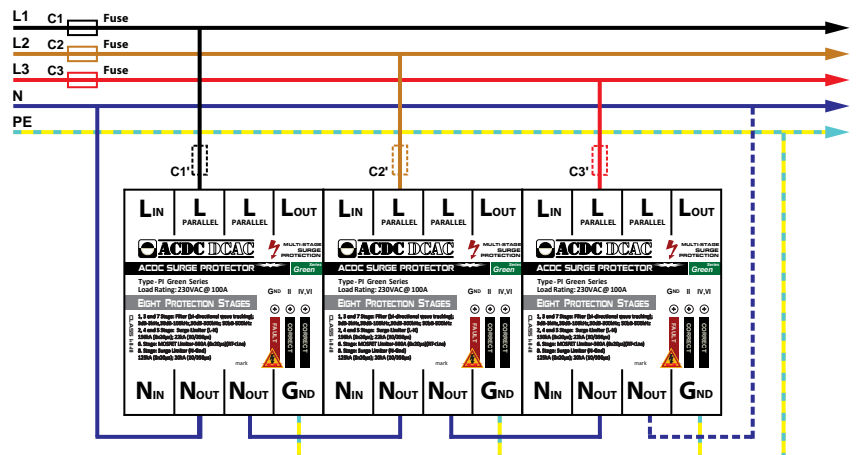
### SERIES - Three Phase Installation with phase (L) and without neutral (N) filtering



### PARALLEL - Single Phase Installation (for current > 100A per phase)



### PARALLEL - Three Phase Installation (for current > 100A per phase)



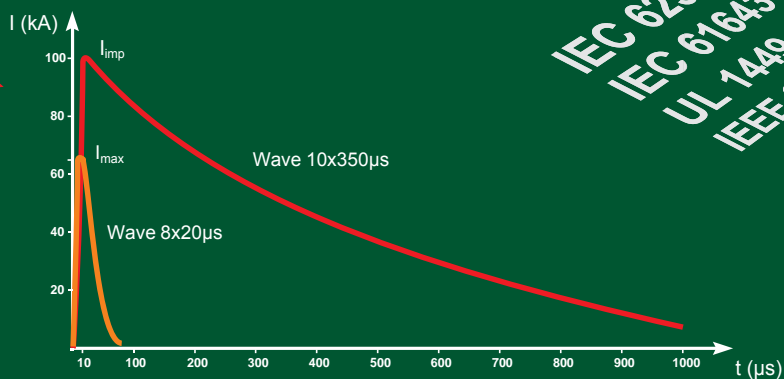
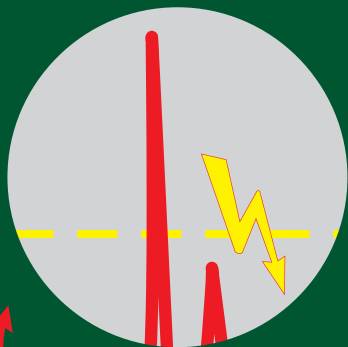




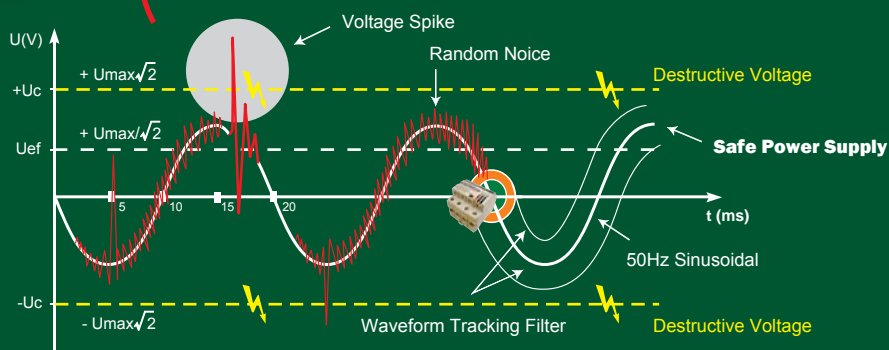
**. . . ACDC DCAC for Your Safety**

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# Surge



IEC 62305-4  
IEC 61643-1  
UL 1449 3th  
IEEE C62.41.1



## ACDC Surge Protector

		Green Series	Blue Series	Red Series	Orange Series	Pink Series	Yellow Series
Application	Single Phase	✓	✓	✓	✓	✓	
	Three Phase	✓	✓	✓			
	Signal Line						✓
Installation	Rail Din	✓	✓	✓			
	Plug In				✓	✓	✓
Connection	Series Connection	✓	✓	✓	✓	✓	✓
	Parallel Connection (Optional)	✓	✓	✓			
Grounding	Signal. for Ground Condition	✓	✓	✓	✓		
	Option for ground Filtering		✓	✓			
	No Ground Contamination	✓	✓	✓	✓	✓	✓
Degree of Protection	Eight (8) Stages Surge Protector	✓	✓	✓*	✓		
	Three (3) Stages Surge Protector					✓	✓
Signalization	Three Stages Signalization	✓	✓	✓	✓		
	AC Signalization					✓	
	Signal Line Signalization						✓
Options	Modularity	✓	✓	✓			
	Free Contact Alarm	✓	✓	✓			
	Degree of Enclosures IP54, IP65	✓	✓	✓			
Standards	IEC61643-1 Class I+II+III; IEC60939-2	✓	✓	✓	✓	✓*	
	IEC61643-21						✓

Products Manufacture by  
ACDC DCAC  
Multi-Stage Surge Protection

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