



Application

The PROTEC Z family is a range of surge suppressors for protection of medium voltage motors, generators and transformers against transient switching surges. PROTEC Z surge suppressors alter circuit parameters in such a way that transient over voltages due to switching are suppressed so as to maintain the voltage at the machine terminals within the IEEE ratings. They are recommended for use in systems incorporating vacuum, SF6 and metal vapour contactors and breakers. PROTEC Z surge suppressors are supplied in compact and standard versions for MV applications.

A LV version also available (see separate product brochure).

Ratings

Attribute	Unit	MM3(2-5kV) SSW	MM3(5-8kV) SSW	PM3(5-13,8kV) SSW	MM3(5-13,8kV) SSW	MM1 (5 - 13,8kV) SSW	MM1 - 15,5kV SSW	MM1 - 22kV SSW
Maximum rated voltage	kV	8	8	13,8	13,8	13,8	17,1	25
Rated voltage range	kV	2 - 5	2 - 8	5 - 13,8	5 - 13,8	5 / √3 - 13,8/ √3	13,8 / √3 - 17.1/ √3	17.6 / √3 - 25/ √3
THD (V)	%	10	10	10	10	10	10	10
BIL	kV	75	75	95	95	95	125	125
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Ambient temperature - minimum	°C	-40	-40	-40	-40	-40	-40	-40
Ambient temperature - maximum	°C	+80	+80	+80	+80	+80	+80	+80
Altitude	masl	Up to 2000	Up to 2000	Up to 2000	Up to 2000	Up to 2000	Up to 2000	Up to 2000

Specification

Attribute	Unit	MM3(2-5kV) SSW	MM3(5-8kV) SSW	PM3(5-13,8kV) SSW	MM3(5-13,8kV) SSW	MM1 (5 - 13,8kV) SSW	MM1 - 15,5kV SSW	MM1 - 22kV SSW
Rated capacitance	μF	3 x 0,2	3 x 0,2	3 x 0,2	3 x 0,2	1 x 0,2	1 x 0,15	1 x 0,125
Capacitance tolerance	%	-5/+5	-5/+5	-5/+5	-5/+5	-5/+5	-5/+5	-5/+5
Resistance per phase	Ω	30	30	30	30	30	30	30
Tangent Delta		20 x 10-4	20 x 10-4	20 x 10-4				
Dielectric type		all-film	all-film	all-film	all-film	all-film	all-film	all-film
Bushings: Impulse test voltage Dry test voltage Wet test voltage Minimum creepage	kV kV kV mm	75 28 28 190	75 28 28 190	95 38 28 305	95 38 28 305	95 38 28 305	125 50 50 600	125 50 50 600
Installation location		Machine Mount (MM)	Machine Mount (MM)	Panel Mount (PM)	Machine Mount (MM)	Machine Mount (MM)	Machine Mount (MM)	Machine Mount (MM)
Fusing		No internal fusing	No Internal fusing	No internal fusing				

Routine tests

Voltage withstand terminal terminal	kV dc	18,06 for 10s	18,06 for 10s	53,8 for 10s	53,8 for 10s	N/A	N/A	N/A
Voltage test terminal- ground	kV ac	9,05 for 10s	9,05 for 10s	26,9 for 10s	26,9 for 10s	26,9 for 10s	33,33 for 10s	47,3 for 10s
Tangent delta		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacitance		Yes	Yes	Yes	Yes	Yes	Yes	Yes

Reliability

Maintenance requirements	No maintenance re	maintenance required. Recommend yearly visual inspection and bi yearly capacitance verification.								
Performance verification	Via the safety switch	ne safety switch								
Expected service life	>15 years	>15 years	>15 years	>15 years	>15 years	>15 years	>15 years			

Construction

Phases		Three phase	Three phase	Three phase	Three phase	Single phase	Single phase	Single phase
Enclosure fabrication		Welded						
Enclosure material		304 Stainless steel						
Primer		Ероху						
Finish		PUR RAL 7032						
Connection		YN	YN	YN	YN	I	I	I
Bushing quantity		3	3	3	3	1	1	1
Bushing type		Ceramic						
Insulation		Fluid						
Fluid type		Jarylec C101D						
Fluid volume	litre	7	7	6	6	12	6,5	7,5
Weight	kg	19	19	22	22	22	22	22
Overall Dimensions (W x H x D)	mm	415 x 240 x 135	415 x 240 x 135	520x265x105	520x265x105	520x265x105	415x285x135	415x285x140

Standards

Explosion Protected Ex nA IIC T3A		Yes	Yes	Yes	Yes	No	No	No				
Routine tests		IEC 60871-1:	IEC 60871-1:	IEC 60871-1:	IEC 60871-1:	IEC 60871-1:	IEC 60871-1:	IEC 60871-1:				
		2005	2005	2005	2005	2005	2005	2005				
Temperature category	°C	-25/D	-25/D	-25/D	-25/D	-25/D	-25/D	-25/D				
	C	(-25/+80)	(-25/+80)	(-25/+80)	(-25/+80)	(-25/+80)	(-25/+80)	(-25/+80)				
Quality Management System			IEC 9001:2008									
Certification Body					Bureau VERIT	AS						
In compliance with			IEC 60871-1: 2005; VDE 0560 part 410; ANSI/IEEE 18; NEMA CP-1									
Marks		CE IA	CE IA	CE IA	CE IA	CE	CE	CE				

Options

| Safety switch | Yes |
|--------------------------|-----|-----|-----|-----|-----|-----|-----|
| Partial discharge sensor | No |

Shipping

Ompping							
Anti-static link	Yes						



PROTEC Z +

Combined transient switching surge suppressor with PD sensors for PD monitoring and rotating machine management





The PROTEC Z + is an extremely effective sensor for on-line monitoring of the condition of the winding insulation of the protected motor, generator or dry type transformer utilizing partial discharge analysis. It is more effective than coupling capacitors used for this purpose because of the wider frequency response afforded by the PROTEC Z +. This permits seeing deeper into the windings and provides significantly improved coverage, which has always been a weakness of conventional coupling capacitor sensors.

Features

- Robust, high grade stainless steel enclosure.
- · Enhanced THD (V) withstand.
- Designed for multi-ranging applications.
- Permits integrity test of functional components.
- Safety switch on all HV products as a standard.
- Option for integrated partial discharge sensor.
- Recognised quality system certification

Benefits

The Protec Z offers complete protection to the insulation systems of motors, generators and dry type transformers against long and short term damage from over voltage spikes caused by contactors and breakers. In particular, insulation between turns and coils close to the line terminals are not exposed to excessive voltages resulting from non-uniform voltage distribution caused by steep fronted transients.

The Protec Z provides insulation coordination at all practical surge magnitudes and rise times. Multiple preand re-strikes in the switchgear are eliminated, resulting in significant life extension of machines.

In addition, the Protec Z + PD option permits measurement and monitoring of partial discharge activity.

Installation

The Protec Z must be installed in accordance with the latest NTSA Protec Z application and installation manual, available on NTSA website www.ntsa.co.za

Warranty

The Protec Z surge suppressors are backed by a twelve month factory warranty.

NOTE

NTSA reserves the right to apply continuous research and development which may result in improvements affecting any aspect of specification or appearance at any time.

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