STRIKE TECHNOLOGIES

ZORC

ZORC® TECHNICAL SPECIFICATION SHEET

3 Phase Standard ZORC							
Parameter	**Unit**	**3.3kV**	**4.16kV**	**6.6kV**	**7.2kV**	**11kV**	**12.5/13.8kV**
Rated Voltage (L-L)	kV	3.3	4.16	6.6	7.2	11	13.8
Voltage Range	kV	2.2-3.3	3.3-4.2	4.2-6.6	6.6-7.2	7.9-11	12.0-13.8
Rated Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Capacitance per phase	µF	0.2	0.2	0.2	0.2	0.2	0.2
Capacitance Tolerance	%	-5 / +10	-5 / +10	-5 / +10	-5 / +10	-5 / +10	-5 / +10
Resistance per phase	Ω	30	30	30	30	30	30
Ambient Working Temperature	°C	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)
	°F	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)
Cold Start Temperature (Minimum)	°C (°F)	-40(-40)	-40(-40)	-40(-40)	-40(-40)	-40(-40)	-40(-40)
THD (V)	%	8	8	8	8	8	8
Dielectric type		All-film	All-film	All-film	All-film	All-film	All-film
Bushing type		Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Bushing quantity		3				3	3
Bushing specifications							
Insulator BIL (Terminal to casing)	kV	95	95	95	95	95	95
Terminal to Terminal Clearance	mm	63.5	63.5	63.5	63.5	121	121
AC withstand wet	kV	38 (1min)	38 (1min)	38 (1min)	38 (1min)	38 (1min)	38 (1min)
AC withstand dry	kV	70 (1min)	70 (1min)	70 (1min)	70 (1min)	70 (1min)	70 (1min)
Impulse voltage (1.2uS/50uS) (both polarities)	kV	(+)96	(+)96	(+)96	(+)96	(+)96	(+)96
	kV	(-)96	(-)96	(-)96	(-)96	(-)96	(-)96
Arc distance	mm	160	160	160	160	160	160
	inch	6.3	6.3	6.3	6.3	6.3	6.3
Creepage to earth/ground	mm	380	380	380	380	380	380
	inch	15	15	15	15	15	15
Bushing Connection(s): (Max torque)	Nm	20	20	20	20	20	20
	ft lb	14.75	14.75	14.75	14.75	14.75	14.75
Installation		Panel / Machine	Panel / Machine	Panel / Machine	Panel / Machine	Panel / Machine	Panel / Machine
Approximate Mass	kg	21	21	21	21	26	29
	lb	46.30	46.30	46.30	46.30	57.32	63.93
Overall dimensions (W x H x D)	mm	429 x 444 x 139				536 x 489 x 106	536 x 489 x 121
	inch	16.89 x 17.48 x 5.47				21.1 x 19.25 x 4.17	21.1 x 19.25 x 4.76
Earthing / Grounding		Min 16mm² to 25mm² (to machine earth) / 0.0248 in² to 0.0387 in² (to machine ground)					
Dielectric Fluid (Oil)		Faradol 810 / Jarylec 101					
Fusing		No internal fusing					
Enclosure material		Stainless steel (SS409) with thickness of 2mm / 0.079 inches					
Paint primer		Aerofin Epoxy Primer Beige (180-0039) Thickness: 40µm					
Paint finish		Thanacryl Polyurethane Enamel (RAL 7038) Thickness: 80 µm					
Product codes (Standard)		M3-3kV P3-3kV	M3-4.16kV P3-4.16kV	M3-6kV P3-6kV	M3-7.2kV P3-7.2kV	M3-11kV P3-11kV	P3-12kV / 13kV-U20 M3-12kV / 13kV-U20
Product codes (PS Variant)		M3-S-3kV P3-S-3kV	M3-S-4.16kV P3-S-4.16kV	M3-S-6kV P3-S-6kV	M3-S-7.2kV P3-S-7.2kV	M3-S-11kV P3-S-11kV	P3-S-12kV / 13kV-U20 M3-S-12kV / 13kV-U20

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Single Phase ZORC						
Parameter	**Unit**	**3.3kV**	**6.6kV**	**11kV**	**12.5kV / 13.8kV**	**15kV**
Rated Voltage (L-L)	kV	3,3	6,6	11	13,8	15
Voltage Range	kV	2.2 - 3.3	4.2 - 6.6	7.9 - 11	12.0 - 13.8	14 - 15
Rated Frequency	Hz	50/60	50/60	50/60	50/60	50/60
Rated Capacitance per phase	µF	0,1	0,1	0,2	0,2	0,15
Capacitance Tolerance	%	-5 / +10	-5 / +10	-5 / +10	-5 / +10	-5 / +10
Resistance per phase	Ω	30	30	30	30	30
Ambient Working Temperature	°C	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)
	°F	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)
Cold Start Temperature (Minimum)	°C (°F)	-40(-40)	-40(-40)	-40(-40)	-40(-40)	-40(-40)
THD (V)	%	8	8	8	8	8
Dielectric type		All-film	All-film	All-film	All-film	All-film
Bushing type		D-116	D-116	Ceramic	Ceramic	Ceramic
Bushing quantity		NA		1	1	1
Bushing specifications						
Insulator BIL (Terminal to casing)	kV	NA		95	95	150
AC withstand wet	kV	NA		38 (1min)	38 (1min)	50 (1min)
AC withstand dry	kV	NA		70 (1min)	70 (1min)	85 (1min)
Impulse voltage (1.2uS/50uS) (both polarities)	kV	NA		(+)96	(+)96	(+)150
	kV	NA		(-)96	(-)96	(-)149
Arc distance	mm	NA		160	160	240
	inch	NA		6,3	6,3	9,45
Creepage to earth/ground	mm	NA		380	380	620
	inch	NA		15	15	24,4
Bushing Connection(s): (Max torque)	Nm	NA		20	20	20
	ft lb	NA		14,75	14,75	14,75
Installation		Machine	Machine	Machine	Machine	Machine
Approximate Mass	kg	2	2	21	24	24
	lb	4,4	4,4	46.30	52.91	52.91
Overall dimensions (W x H x D)	mm	116 x 180 x 72		536 x 489 x 106	536 x 489 x 121	429 x 522 x 106
	inch	4.57x 7.09 x 2.83		21.1 x 19.25 x 4.17	21.1 x 19.25 x 4.76	16.89 x 20.55 x 4.17
Earthing / Grounding	Min 16mm² to 25mm² (to machine earth) / 0.0248 in² to 0.0387 in² (to machine ground)					
Dielectric Fluid (Oil)		C101		Faradol 810 / Jarylec 101		
Fusing		No internal fusing		No internal fusing		
Enclosure material		Aluminium		Stainless steel (SS409) with thickness of 2mm / 0.079 inches		
Paint primer		NA		Aerofin Epoxy Primer Beige (180-0039)		
Paint finish		NA		Thanacryl Polyurethane Enamel (700-Line)		
Product codes (Standard)		M1-3kV	M1-6kV	M1-11kV	M1-12kV /13kV-U20 M1-13kV-U25	M1-15kV
Product codes (PS Variant)		NA		M1-S-11kV	M1-S-12kV /13kV-U20 M1-S-13kV-U25	M1-S-15kV

STRIKE TECHNOLOGIES

ZORC

Specification –3 Phase compact ZORC					3 Phase low voltage ZORC			
Parameter	**Unit**	**3.3kV**	**4.16kV**	**6.6kV**	**LVZ400**	**LVZ550**	**LVZ690**	**LVZ1000**
Rated Voltage (L-L)	kV	3.3	4.16	6.6	0.4	0.55	0.69	1
Voltage Range	kV	2.2-3.3	3.3-4.2	6.6	0.38-0.4	0.46-0.55	0.58-0.69	0.8-1
Rated Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated Capacitance per phase	µF	0.1	0.1	0.1	0.5	0.5	0.5	0.5
Capacitance Tolerance	%	-5 / +10	-5 / +10	-5 / +10	-5 / +10	-5 / +10	-5 / +10	-5 / +10
Resistance per phase	Ω	30	30	30	22	22	22	22
Ambient Working Temperature	°C	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)
	°F	-13 / D (Max 131)	-13 / D (Max 131)	-13 /D (Max 131)	-13 /D (Max 131)	-13 /D (Max 131)	-13 /D (Max 131)	-13 /D (Max 131)
Cold Start Temperature (Minimum)	°C (°F)	-40(-40)	-40(-40)	-40(-40)	-40(-40)	-40(-40)	-40(-40)	-40(-40)
THD (V)	%	5	5	5	5	5	5	5
Dielectric type		All-film	All-film	All-film	All-film	All-film	All-film	All-film
Bushing type		Ceramic			Terminal housing			
Bushing quantity		Three			NA			
Bushing specifications								
Insulator BIL (Terminal to casing)	kV	45	45	45	NA			
Terminal to Terminal Clearance	mm	53	53	53	NA			
AC withstand wet	kV	13 (1min)	13 (1min)	13 (1min)	NA			
AC withstand dry	kV	21 (1min)	21 (1min)	21 (1min)	NA			
Impulse voltage (1.2uS/50uS) (both polarities)	kV	(+)45	(+)45	(+)45	NA			
	kV	(-)45	(-)45	(-)45	NA			
Arc distance	mm	45	45	45	NA			
	inch	1.77	1.77	1.77	NA			
Creepage to earth/ground	mm	60	60	60	NA			
	inch	2.36	2.36	2.36	NA			
Bushing Connection(s): (Max torque)	Nm	20			NA			
	ft lb	14.75			NA			
Installation		Machine	Machine	Machine	Panel/ Machine	Panel/ Machine	Panel/ Machine	Panel/ Machine
Approximate Mass	kg	7	7	7	3.2	3.2	3.2	3.2
	lb	15.43	15.43	15.43	7.05	7.05	7.05	7.05
Overall dimensions (W x H x D)	mm	281 x 246 x 117			182 x 255x 90			
	inch	11.06 x 9.69 x 4.61			7.16 x 10.04 x 3.54			
Earthing / Grounding		Min 16mm² to 25mm² (to machine earth) / 0.0248 in² to 0.0387 in² (to machine ground)			Min 4mm² to 16mm² (to machine earth) / 0.0062 in² to 0.025 in² (to machine ground)			
Dielectric Fluid (Oil)		Faradol 810 / Jarylec 101			None			
Fusing		No internal fusing			No internal fusing			
Enclosure material		Stainless steel (SS409) with thickness of 2mm / 0.079 inches			Mild Steel (Commercial quality)			
Paint primer		Aerofin Epoxy Primer Beige (180-0039) Thickness: 40µm			Powder Coated			
Paint finish		Thanacryl Polyurethane Enamel (RAL 7038) Thickness: 80 µm			Grey631			
Connection		YN			YN			
Product codes (Standard)		M3C-3kV	M3C-4.16kV	M3C-6kV	LVZ400	LVZ550	LVZ690	LVZ1000
Product codes (PS Variant)		M3C-S-3kV	M3C-S-4.16kV	M3C-S-6kV	NA			

STRIKE TECHNOLOGIES

ZORC

Single Phase ZORC RC Suppressor						
Parameter	**Unit**	**22kV**	**25kV**	**33kV**	**36kV**	**40kV**
Rated Voltage (L-L)	kV	22	25	33	36	40
Voltage Range	kV	14 - 24	22.5 - 25	25.5 - 33	33.5 - 36	36.5 - 40
Rated Frequency	Hz	50/60	50/60	50/60	50/60	50/60
Rated Capacitance per phase	µF	0.2	0.2	0.2	0.2	0.2
Capacitance Tolerance	%	-5 / +10	-5 / +10	-5 / +10	-5 / +10	-5 / +10
Resistance per phase	Ω	30	30	30	30	30
Ambient Working Temperature	°C	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)	-25 / D (Max 55)
	°F	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)	-13 / D (Max 131)
Cold Start Temperature (Minimum)	°C (°F)	-40(-40)	-40(-40)	-40(-40)	-40(-40)	-40(-40)
THD (V)	%	8	8	8	8	8
Dielectric type		All-film	All-film	All-film	All-film	All-film
Bushing type		Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Bushing quantity		1	2	2	2	2
Bushing specifications						
Insulator BIL (Terminal to casing)	kV	170	170 +170	170 +170	170 +170	170 +170
Terminal to Terminal Clearance	mm	n/a	324.5	324.5	324.5	324.5
AC withstand wet	kV	70 (1min)	70+70 (1min)	70+70 (1min)	70+70 (1min)	70+70 (1min)
AC withstand dry	kV	100 (1min)	100+100 (1min)	100+100 (1min)	100+100 (1min)	100+100 (1min)
Impulse voltage (1.2uS/50uS) (both polarities)	kV	(+)200	(+)(200+200)	(+)(200+200)	(+)(200+200)	(+)(200+200)
	kV	(-)180	(-)(180+180)	(-)(180+180)	(-)(180+180)	(-)(180+180)
Arc distance	mm	300	300	300	300	300
	inch	11.8	11.8	11.8	11.8	11.8
Creepage to earth/ground	mm	820	820 + 820	820 + 820	820 + 820	820 + 820
	inch	32.3	32.3 + 32.3	32.3 + 32.3	32.3 + 32.3	32.3 + 32.3
Bushing Connection(s): (Max torque)	Nm	20	20	20	20	20
	ft lb	14.75	14.75	14.75	14.75	14.75
Station Post Insulator						
Station Post Insulator Quantity		None	1	1	1	1
Impulse Voltage BIL rating	kV	n/a	250	250	250	250
AC withstand wet	kV	n/a	125	125	125	125
AC withstand dry	kV	n/a	170	170	170	170
Impulse voltage (1.2uS/50uS) (both polarities)	kV	n/a	(+)275 & (-)350	(+)275 & (-)350	(+)275 & (-)350	(+)275 & (-)350
Arc distance	mm	n/a	450	450	450	450
	inch	n/a	17.7	17.7	17.7	17.7
Creepage to earth/ground	mm	n/a	1300	1300	1300	1300
	inch	n/a	51.2	51.2	51.2	51.2
Installation		Machine	Machine	Machine	Machine	Machine
Approximate Mass	kg	33	115.26	115.26	115.26	115.26
	lb	72.75	254.105	254.105	254.105	254.105
Overall dimensions (W x H x D)	mm	430 x 762 x 139	440 x 1526 x 440			
	inch	16.93 x 30 x 5.47	17.32 x 60.08 x 17.32			
Earthing / Grounding		Min 16mm² to 25mm² (to machine earth) / 0.0248 in² to 0.0387 in² (to machine ground)				
Dielectric Fluid (Oil)		Faradol 810 / Jarylec 101				
Fusing		No internal fusing				
Enclosure material		Stainless steel (SS409) with thickness of 2mm / 0.079 inches				
Paint primer		Aerofin Epoxy Primer Beige (180-0039) Thickness: 40µm				
Paint finish		Thanacryl Polyurethane Enamel (RAL 7038) Thickness: 80 µm				
Configuration		One unit	Two units per phase – values above are consolidated for 2 cans			
Product codes (Standard)		M1-22kV	M1-25kV	M1-33kV	M1-36kV	M1-40kV
Product codes (PS Variant)		M1-S-22kV	NA			

Standards	
Quality Management System	ISO 9001: 2015
Overall manufacturing compliance	IEC 60871-1: 2005 / ANSI, IEEE 18 / NEMA CP-1 / VDE 0560 part 410 / CIGRé 13.02

Testing	
Manufacturing tests	Each ZORC surge suppressor is routine tested prior to dispatch. Test certificates are available.
Field tests	Check for obvious physical damage (broken bushing, leaking impregnate, bulging tank, etc.) Measure the capacitance from each phase to earth and check that it is within 10% of nominal as stamped on the ZORC rating plate. Use a hand-held capacitance meter or apply a known low voltage (e.g. 230V ac) between each phase and earth, measure the phase currents, and calculate the capacitance. With the ZORC line connections bonded together, and using a DC cable test set, test between line and earth for 10 seconds. Confirm there are no dielectric breakdowns or audible discharges.

Additional Considerations	
Maintenance	A ZORC is maintenance-free, requiring only periodic cleaning of bushings in contaminated areas. Equipment should be inspected periodically for failure or leaks. This check can be made after de-energising and following "Safety Instruction, Shock Hazard" detailed elsewhere in this document. The use of hoses in the vicinity of an 'open' ZORC installation must be avoided. Testing can be carried out once a year.
Inspection	Inspect the ZORC for dirty, broken or chipped bushings. Physical damage to the casing. Earth & the leads. The casing earth and leads should not be corroded. Inspect casing for any bulging. (Needs to be removed from service immediately). Inspect very carefully for oil leaks. (Needs to be removed from service immediately).

General	
ZORC® is a registered Trademark with Strike Technologies.	
Hazardous location certification	Class 1 Div 2 Certification of ExN (Non Sparking) available on **3.3 - 13.8kV** Units, Temp Classes T1-T5, SABS 970-1971
Life expectancy	20 years on all models
Warranty	12 month factory warranty
Further documentation available	ZORC Dimensional Drawings ZORC Operating Manual ZORC Instructions for Safe Use ZORC Pressure Sensor Spec Faradol 810 MSDS Jarylec 101 MSDS