L.V. Power System



Surge Protection Devices

Featuring UL-Certified New Products

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CHALLENGE INDUSTRIAL CO., LTD. SINCE 1974

Headquarters



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Introduction

From the need to automatize as well as remotely, precisely control and monitor an electrical power system, the use of a large amount of electronic equipment is resulted. However, a high-voltage surge induced by lightning discharge current, as well as a surge caused by a line fault or the operation of a switch, may easily damage expensive equipment or even threaten the safety of personnel. With a view to averting the aforementioned surge-related dangers, a carefully-designed low-voltage power system and its appropriate placement, combined with installation of a correct surge protection device, are necessary means for preventing serious harm.

Designed for this purpose, WII low-voltage power system surge protection devices (SPD) are here presented in two series. The first series of SPDs consists of quick plug-in modular models, with a choice of optional monitor - one offering sound and light alarms and the other featuring a remote alarm. The second series of SPDs comprises unibody models capable of discharging large currents.

A recently launched series of WII quick plug-in modular models is a ULcertified line and boasts of improved capability and structural design, suitable for the needs of special markets.

Each of the UL-certified SPDs is equipped with a varistor and is enclosed in a self-extinguishing case, both of which are likewise ULapproved. In addition, the unibody SPD models are cast in selfextinguishing resin. All of these attributes greatly enhance the safety of the products.

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I. Modular Surge Protection Devices

◆ Models WSP- 1 / 2 + 3

□ Type of Protection (B+C, C) ② Number of Modules (1~4) ③ NPE and/or Modular Monitor (FS or AS)

Features and Uses

WSP-	B+C	С	NPE			
Application	for buildings with an overhead power source or with a lightning protection device	for any subpanel, or for buildings with an underground power source or those without a lightning protection device	between two different earth systems			
Protective Elements	nonlinear zinc oxide varistor and thermal stripper	nonlinear zinc oxide varistor and dymanic thermal stripper	spark gap			
Structure	qui	ck plug-in design with b	ase			
Fault Indication		fault indicator window				
DIN Rail		35m m				



overheating protective device

varistor 🛱 spark gap

Technical Specifications

WSP-			B+C/1		C/1				NPE	
Maximum Continuous Voltage	Uc	V(AC)	150	280	385	150	280	385	550	255
Catagory	VDE	0675		B+C	la-		(~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Category	IEC 6	IEC 61643-1		Class I+I	l,		Cla	ss II		
Lightning Protection Zone (LPZ)		-		0•1			1→2			
Peak Current (10/350) # S	limp	imp (KA)		7.5	7.5		-	-		
Rated Discharge Current (8/20) μ S	In	In (KA)		30 20			25			
Maximum Discharge Current (8/20) μ S	Imax	lmax (KA)		50* 40		0				
n-Module (n×Imax) KA				n X 50 n X 40						
	at	1 KA	< 0.45	< 0.8	< 1.0	< 0.5	< 0.9	< 1.2	< 1.7	
Protection Level, Up (KV)	at	5 KA	< 0.5	< 0.9	< 1.2	< 0.65	< 1.1	< 1.5	< 2.1	< 1.5
	a	at In	< 0.6	< 1.1	< 1.5	< 0.7	< 1.4	< 1.8	< 2.5	
Response Time	t A	ta (ns)		< 25 < 25				< 100		
Operating Temperature	v	(°C)	-40~+80							
IP		-					20			
Current at Uc	lf	(mA)	≤1							

Note: For special requirements please contact us.

* Imax of WSP-B+C/1 up to 65 kA upon request.



II. UL-Certified Modular Surge Protection Devices

Models WSP- 1 / 2 + 3
 Type of Protection (B⁺, C⁺) 2. Number of Modules (1~4) 3. NPE⁺ and/or Modular Monitor (Built-In-FS Base)

Features and Uses

WSP-	B⁺	C+	NPE ⁺			
Application	for buildings with an overhead power source or with a lightning protection device	for any subpanel, or for buildings with an underground power source or those without a lightning protection device	between two different earth systems			
Protective Elements	nonlinear zinc oxide varistor and thermal stripper	nonlinear zinc oxide varistor and dymanic thermal stripper	gas (discharge) tube			
Structure	quid	ck plug-in design with b	ase			
Fault Indication		fault indicator window				
DIN Rail		35mm				



overheating protective device

varistor gas(discharge) tube

Technical Specifications

WSP-	B ⁺ /1			C ⁺ /1			NPE ⁺		
Maximum Continuous Voltage	Uc V	/(AC)	150	280	320	150	280	320	255
Catagory	VDE 06	675		В		С			
Category	IEC 61643-1			Class I	ŭ		Class II	-	
Lightning Protection Zone (LPZ)	-			0-→1		1→2			
Peak Current (10/350) µ S	limp	(KA)	8	7.5	7.5		-		
Standard					UL 1449	9 / CSA			
Rated Discharge Current (8/20) μ S	In (K	<a)< th=""><th></th><th>30</th><th></th><th></th><th>20</th><th></th><th>30</th></a)<>		30			20		30
Maximum Discharge Current (8/20) μ S	Imax	(KA)		65			40		65
n-Module (n× Imax) KA			n X 6 5			n X 40			
Protection Level 11n (K)A									≦ 1.5
	at I	In	≦1.2	≦1.6	≦1.8	≦ 1.0	≦ 1.5	≦1.6	
Response Time	tA	(ns)		< 25			< 25		< 100
Operating Temperature	v	(°C)	°C) -40~+85						
IP						20			
Current at Uc	lf	(mA)				≤1			



III. Modular Monitors

FS Monitor

The FS monitor is designed for use with a B+C or C modular surge protection device. When any one of the modules of a remotely installed SPD needs to be replaced due to damage from overcurrent or other causes, the situation is made known by the window indicator on the SPD, but operating personnel may not be immediately aware of it due to the remote location of the device. In this instance, the FS monitor provides a solution by sending a signal to the control center. The signal is propelled by a mechanical interlocking action and then transmitted via the NC (Normal Close) or NO (Normal Open) contact of the monitor. Personnel at the control center will notice the signal immediately or during periodic inspection. Please refer to Fig. (III) on Page 5 for a combination of FS monitor with an appropriate modular SPD.

AS Monitor

The AS monitor is designed for use with a B+C or C modular surge protection device. When any one of the modules of a SPD needs to be replaced due to damage from overcurrent or other causes, the situation is made known by the window indicator on the SPD. However, if the SPD is installed in a location inconvenient for monitoring its window indicator (e.g. in an apartment, a farm, an office building, or a bank), the AS monitor offers a solution in this situation by creating an alarm through its mechanical interlocking action. The alarm comes in the form of a high frequency sound, combined with a blinking LED light. The sound alarm will continue for 24 hours unless stopped (by the pressing of the designated button); if it is not stopped, the alarm will automatically continue for another 24 hours and will repeat this cycle until the fault is resolved. Please refer to Fig. (III) on Page 5 for a combination of an AS monitor with an appropriate modular SPD.







protective device Varistor

• S	peci	ificat	tions

FS			AS			
Rated Voltage of Contactor	U (AC)	≦250 V	Operating Voltage	UN (AC)	110 V or 220 V/ 50 or 60 Hz	
Rated Current of Contactor	I (AC)	6 A	Maximum Continous Operating Voltage	UC (AC)	250 V	
Symbol of Contactor	NC	1-3	Rated Current	IL (AC)	40 mA	
	NO	1-2				
Size of Wires			≦ 2.5 mm²			
DIN Rail			35mm			



IV. Modular Surge Protection Devices With Monitors

Available Combinations

Product	Beller Beller Wilder Wilder Beller Be		
WSP-	B+C/n C/n	B+C/n+NPE C/n+NPE	B+C/n+FS(AS) C/n+FS(AS)
n*	1, 2, 3 or 4	1, 2 or 3	1, 2, 3 or 4
Fig.	(1)	(11)	(111)
Dimensions AxBxD (mm)	(18, 36, 54 or 72)X90X62	(36, 54 or 72)X90X62	(36, 54, 72 or 90)X90X62

Installation Drawings

















V. UL-Certified Modular Surge Protection Devices With Monitor (Built-In-FS Base)*

Available Combinations

Product	L1 L2 L2 L2 L2 L2 L2 L2 L2 L2 L2 L2 L2 L2		e FS
WSP-	B ⁺ /n C ⁺ /n (Optional FS Monitor Available)	B ⁺ /n + NPE ⁺ C ⁺ /n + NPE ⁺ (Optional FS Monitor Available)	Built-In-FS Base
n **	1, 2, 3 or 4	1, 2 or 3	
Fig.	(IV)	(V)	(VI)
Dimensions AxBxD (mm)	(18, 36, 54 or 72)X94X70	(36, 54 or 72)X94X70	18X100X49

*For more information on the functions of FS, please refer to Page 4.

** n = number of modules

Installation Drawings





VI. Unibody Surge Protection Devices

Models WSP- 1 2

1. Maximum Current Discharged 2. Type of Protection

Features and Uses

WSP-	80B	100B	120B	150B	
Application	for buildings w lightning prote source protec lightning strike	vith an overhea action device; fo tion system at a as	d power source or an outdoor pa a location with h	or with a anel; for a high risk of	
Protective Elements	three identical varistors in parallel, each with its far indicator window				
Structure		Unit	oody		
DIN Rail		35	mm		





overheating protective device

WSP-120B

varistor

Technical Specifications

WSP-			80B	100B	120B	150B
	Uc \	/(AC)	270 (430)	270 (430)	270 (430)	270 (430)
Manimum Cantinuava Valtana	(U1m	A V(DC))	420 (680)	420 (680)	420 (680)	420 (680)
Maximum Continuous voitage			460 (750)	460 (750)	460 (750)	460 (750)
			525 (820)	525 (820)		
Catagony	VDE	0675		I	В	
Category	IEC 6	1643-1		Cla	iss I	
Lightning Protection Zone (LPZ)		-	0→1			
Rated Discharge Current (8/20) μ S	In	(KA)	40	50	60	80
Maximum Discharge Current (8/20) μ S	Ima	x (KA)	80	100	120	150
		270 V	1.7	1.8	2.0	2.2
Protection Level 11n /K\/)		420 V	2.6	2.8	3.0	3.4
Protection Level, op (KV)	UC	460 V	2.6	3.0	3.5	3.6
		525 V	2.8	3.1		-
Response Time	tA	(ns)		<	25	
Operating Temperature	v (°C)			-40-	~+80	
IP		-		2	:0	
Current at Uc	lf	(mA)		4	≦1	



VIII. SPD Test Equipmant and UL Certificate

• Equipment at CIC's Advanced Electrical Laboratory for the testing of SPD functionality



Tester (A) 80/20 µ S 65kA



Tester (B) 1.2/50-8/20 μ S 20kV-10kA 12kV-20kA 12kV-1kA

UL Certificate

Certificate Number 20160330-E467230 Report Reference E467230-20160224 Issue Date 2016-MARCH-30 Second State CHALLENGE INDUSTRIAL CO LTD Ard Fi 44 Lane 80 Sec 3 Nan-Kang Rd Sec 3 Nan-Kang District Tapeit This is to certify that COMPONENT - SURGE-PROTECTIVE DEVICES Cat Nos, WSP- B+ 150, WSP- B+ 200, WSP- B+ 320, WSF C+ 150, WSP- C+ 280, WSP- C+ 320, WSP-NPE+ Mare been Investigated by UL in accordance with the Standard(s) indicated on this Cortificate. Standard(s) indicated on this Cortificate. Standard(s) for Safety: ANSI/UL 1449, Surge Protective Devices CA ECN 516 and CSA TIL 1118, Surge/Transient Voltage Superssors Method Information: Soc the UL Online Certifications Directory at Www.ul.com/database for additional information Soppressors Only those products bearing the UL Cartification Mark should be considered as being covered by UL's Certification and Follow-Up Service. Components are incomplete in certain components of components in complete couponents in complete in certain components of components in complete in certain components of components of components of components of components of components of component	CERTIFICA	TE OF COMPLIANCE
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