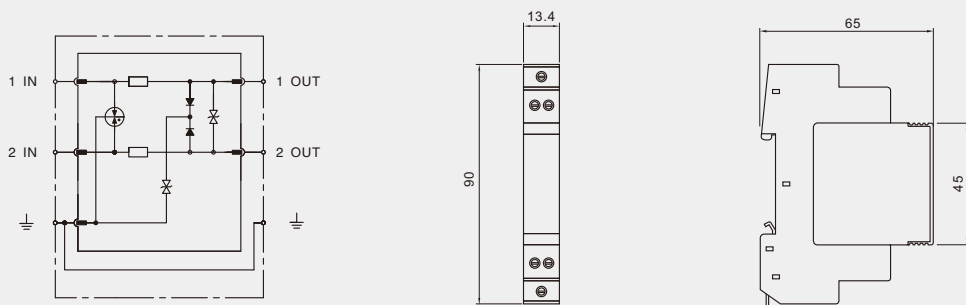




SPD for Data Protection

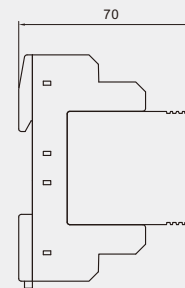
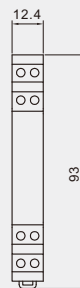
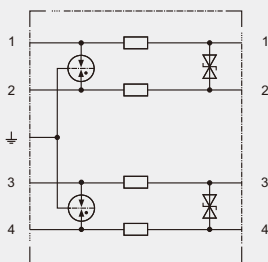
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SPDs for general information (plug-in) BRPI-2L



		BRPI-2L-6	BRPI-2L-12	BRPI-2L-24	BRPI-2L-48	BRPI-2L-60	BRPI-2L-180
Test standards		IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21
Nominal voltage	Un	6V	12V	24V	48V	60V	180V
Max. continuous operating d.c. voltage	Uc	8V	15V	29V	56V	70V	180V
Max. continuous operating a.c. voltage	Uc	5V	11V	20V	40V	49V	130V
Nominal current	IL	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A
C2 Nominal discharge current(8/20μs) per line	In	5kA	5kA	5kA	5kA	5kA	5kA
Voltage protection level [line–line]	Up	≤30V	≤40V	≤60V	≤100V	≤130V	≤320V
Voltage protection level [line–PG]	Up	≤600V	≤600V	≤600V	≤600V	≤600V	≤600V
Response time [line–line]	tA	≤1ns	≤1ns	≤1ns	≤1ns	≤1ns	≤1ns
Response time [line–PG]	tA	≤100ns	≤100ns	≤100ns	≤100ns	≤100ns	≤100ns
Operating temperature range	TU	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C
Connection input/output		Terminal Block	Terminal Block	Terminal Block	Terminal Block	Terminal Block	Terminal Block
Bandwidth		10 Mbps	10 Mbps	10 Mbps	10 Mbps	10 Mbps	10 Mbps
Insertion Loss		≤0.3dB	≤0.3dB	≤0.3dB	≤0.3dB	≤0.3dB	≤0.3dB
Enclosure material		Thermal plastic UL94–V0					
Degree of protection		IP20	IP20	IP20	IP20	IP20	IP20
Order Code		D9100	D9101	D9102	D9103	D9104	D9105

SPDs for general information (plug-in) BR BD 4L



	BR BD 4L-6	BR BD 4L-12	BR BD 4L-24	BR BD 4L-48	BR BD 4L-60	BR BD 4L-180	
Test standards	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	
SPD class	TYPE2 P1	TYPE2 P1	TYPE2 P1	TYPE2 P1	TYPE2 P1	TYPE2 P1	
Nominal voltage	Un	5V	12V	24V	48V	60V	180V
Max. continuous operating d.c. voltage	Uc	6.0V	15V	33V	54V	70V	180V
Max. continuous operating a.c. voltage	Uc	4.2V	10.6V	23.3V	38.1V	49.5V	127V
Nominal current at 45°C	IL	1A	1A	1A	1A	1A	0.75A
C2 Total nominal discharge current (8/20µs)	In	20kA	20kA	20kA	20kA	20kA	20kA
C2 Nominal discharge current (8/20µs) per line	In	10kA	10kA	10kA	10kA	10kA	10kA
Voltage protection level line–line for In C2	Up	≤15V	≤27V	≤55V	≤85V	≤110V	≤270V
Voltage protection level line–PG for In C2	Up	≤600V	≤600V	≤600V	≤600V	≤600V	≤600V
Voltage protection level line–line at 1 kV/µs C3	Up	≤9V	≤19V	≤45V	≤70V	≤90V	≤250V
Voltage protection level line–PG at 1 kV/µs C3	Up	≤550V	≤550V	≤550V	≤550V	≤550V	≤550V
Series impedance per line		1 Ohm	1 Ohm	1 Ohm	1 Ohm	1 Ohm	1.8 Ohm
Cut-off frequency line–PG	fG	1.0 MHz	2.8 MHz	7.8 MHz	8.7 MHz	11.0 MHz	25.0 MHz
Capacitance line–line	C	≤5.4 nF	≤2.0 nF	≤1.0 nF	≤0.7nF	≤500pF	≤240pF
capacitance line–PG	C	≤16 pF	≤16 pF	≤16 pF	≤16 pF	≤16 pF	≤16 pF
Operating temperature range	Tu	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C
Enclosure material	polyamide PA 6.6						
Degree of protection (plugged-in)	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	
Order Code	D9110	D9111	D9112	D9113	D9114	D9115	

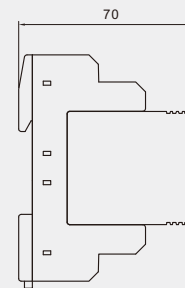
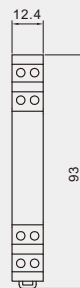
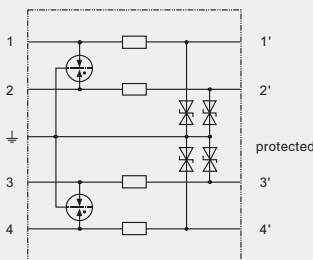


SPDs for general information(plug-in)

BR BE 4L

High degree of protection for four single lines

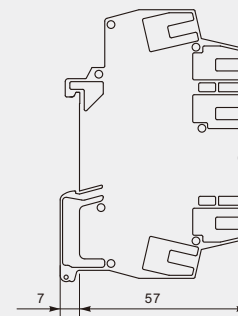
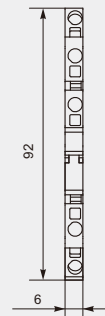
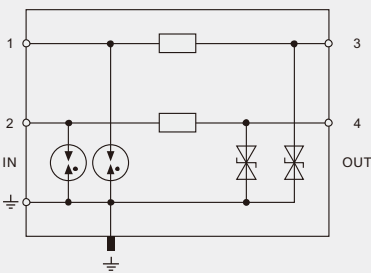
For installation in conformity with the lightning protection zone concept at the boundaries from 0B-2 and higher



	BR BE 4L-6	BR BE 4L-12	BR BE 4L-24	BR BE 4L-48	BR BE 4L-60	BR BE 4L-180
Test standards	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21
SPD class	TYPE2 P1	TYPE2 P1	TYPE2 P1	TYPE2 P1	TYPE2 P1	TYPE2 P1
Nominal voltage	Un	5V	12V	24V	48V	180V
Max. continuous operating d.c. voltage	Uc	6.0V	15V	33V	54V	180V
Max. continuous operating a.c. voltage	Uc	4.2V	10.6V	23.3V	38.1V	127V
Nominal current at 45°C	IL	1A	0.75A	0.75A	0.75A	1A
C2 Total nominal discharge current (8/20µs)	In	20kA	20kA	20kA	20kA	20kA
C2 Nominal discharge current (8/20µs) per line	In	10kA	10kA	10kA	10kA	10kA
Voltage protection level line-line for In C2	Up	≤40V	≤55V	≤105V	≤170V	≤550V
Voltage protection level line-PG for In C2	Up	≤60V	≤60V	≤85V	≤115V	≤300V
Voltage protection level line-line at 1 kV/µs C3	Up	≤18V	≤38V	≤90V	≤140V	≤500V
Voltage protection level line-PG at 1 kV/µs C3	Up	≤9V	≤19V	≤45V	≤70V	≤250V
Series impedance per line		1 Ohm	1.8 Ohm	1.8 Ohm	1.8 Ohm	1 Ohm
Cut-off frequency line-PG	fG	1.0 MHz	2.7 MHz	6.8 MHz	8.7 MHz	25.0 MHz
Capacitance line-line	C	≤2.7 nF	≤1.0 nF	≤0.5 nF	≤0.35 nF	≤250 pF
capacitance line-PG	C	≤5.4 nF	≤2.0nF	≤1.0nF	≤0.7nF	≤240 pF
Operating temperature range	Tu	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C
Enclosure material	polyamide PA 6.6					
Degree of protection (plugged-in)	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Order Code	D9116	D9117	D9118	D9119	D9120	D9121

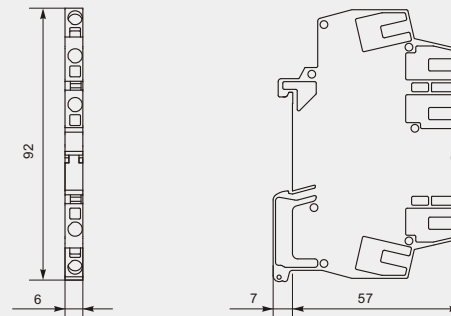
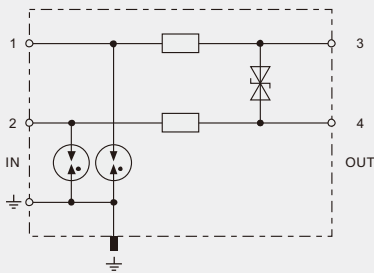


SPDs for general BR-ME



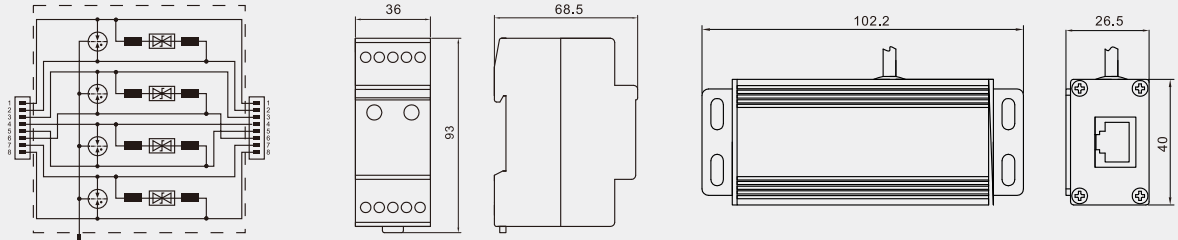
	BR-ME-12	BR-ME-24	BR-ME-48	BR-ME-110	
Test standards	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	
SPD class	TYPE2 P1	TYPE2 P1	TYPE2 P1	TYPE2 P1	
Nominal voltage	Un	12V	24V	48V	110V
Max. continuous operating d.c. voltage	Uc	14V	33V	55V	170V
Max. continuous operating a.c. voltage	Uc	9.5V	23V	38.5V	120V
Nominal current at 45°C	IL	0.5A	0.5A	0.5A	0.5A
C2 Total nominal discharge current (8/20µs)	In	10kA	10kA	10kA	10kA
C2 Nominal discharge current (8/20µs) per line	In	5kA	5kA	5kA	5kA
Voltage protection level line–line for In C2	Up	≤55V	≤110V	≤175V	≤500V
Voltage protection level line–PG for In C2	Up	≤40V	≤65V	≤100V	≤270V
Voltage protection level line–line at 1 kV/µs C3	Up	≤36V	≤90V	≤160V	≤460V
Voltage protection level line–PG at 1 kV/µs C3	Up	≤19V	≤45V	≤80V	≤230V
Series impedance per line		1.8 Ohm	1.8 Ohm	1.8 Ohm	1.8 Ohm
Cut-off frequency line–PG	fG	2.5 MHz	6 MHz	10 MHz	16 MHz
Capacitance line–line	C	< 1.2 nF	< 0.5 nF	< 0.3 nF	< 0.2 nF
capacitance line–PG	C	< 2.4 nF	< 1.0 nF	< 0.6 nF	< 0.4 nF
Operating temperature range	Tu	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C
Cross section of cable		0.08–2.5mm ²	0.08–2.5mm ²	0.08–2.5mm ²	0.08–2.5mm ²
Enclosure material	polyamide PA 6.6				
Degree of protection (plugged-in)		IP 20	IP 20	IP 20	IP 20
Order Code		D9131	D9132	D9133	D9134

SPDs for general BR-MD



	BR-MD-12	BR-MD-24	BR-MD-48	BR-MD-110	
Test standards	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	
SPD class	TYPE2 P1	TYPE2 P1	TYPE2 P1	TYPE2 P1	
Nominal voltage	Un	12V	24V	48V	110V
Max. continuous operating d.c. voltage	Uc	14V	33V	55V	170V
Max. continuous operating a.c. voltage	Uc	9.5V	23V	38.5V	120V
Nominal current at 45°C	IL	0.5A	0.5A	1.7A	0.5A
C2 Total nominal discharge current (8/20µs)	In	10kA	10kA	10kA	10kA
C2 Nominal discharge current (8/20µs) per line	In	5kA	5kA	5kA	5kA
Voltage protection level line–line for In C2	Up	≤25V	≤50V	≤100V	≤260V
Voltage protection level line–PG for In C2	Up	≤750V	≤750V	≤750V	≤750V
Voltage protection level line–line at 1 kV/µs C3	Up	≤19V	≤45V	≤70V	≤230V
Voltage protection level line–PG at 1 kV/µs C3	Up	≤650V	≤650V	≤650V	≤650V
Series impedance per line		1.8 Ohm	1.8 Ohm	0.4 Ohm	1.8 Ohm
Cut-off frequency line–PG	fG	2.5 MHz	6 MHz	10 MHz	16 MHz
Capacitance line–line	C	≤2.4 nF	≤1 nF	<0.6 nF	<0.4 nF
capacitance line–PG	C	≤5 pF	≤5 pF	<10 pF	<5 pF
Operating temperature range	Tu	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C
Cross section of cable		0.08–2.5mm ²	0.08–2.5mm ²	0.08–2.5mm ²	0.08–2.5mm ²
Enclosure material	polyamide PA 6.6				
Degree of protection (plugged-in)	IP 20	IP 20	IP 20	IP 20	
Order Code	D9151	D9152	D9153	D9154	

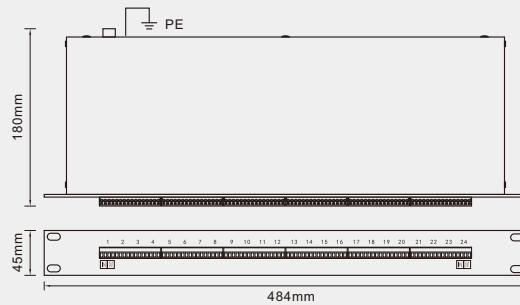
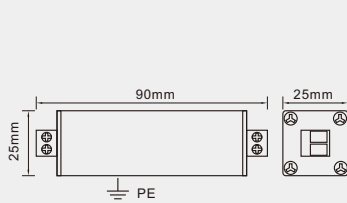
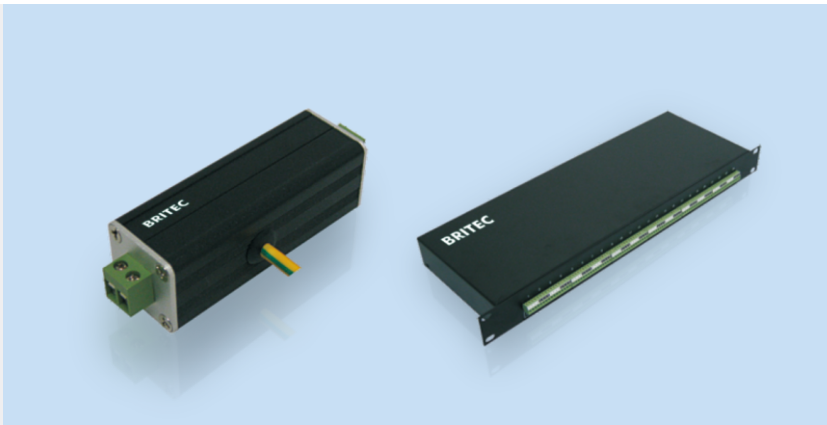
SPDs for general BR-POE



		BR-POE-M	BR-POE-P
Test standards		IEC 61643-21	IEC 61643-21
SPD class		TYPE2 P1	TYPE2 P1
Nominal voltage	Un	48V	48V
Max. continuous operating d.c. voltage	Uc	48V	48V
Max. continuous operating a.c. voltage	Uc	34V	34V
Max. continuous operating d.c. voltage pair-pair(PoE)	Uc	57V	57V
Nominal current	IL	1A	1A
D1 Lightning impulse current (10/350 μs) per line	Iimp	0.5kA	0.5kA
C2 Nominal discharge current (8/20μs) line-line	In	150A	150A
C2 Nominal discharge current (8/20μs) line-PG	In	2.5kA	2.5kA
C2 Total nominal discharge current (8/20μs) line-PG	In	10kA	10kA
C2 Nominal discharge current (8/20μs) pair-pair(PoE)	In	150A	150A
Voltage protection level pair-pair for In C2	Up	≤180V	≤180V
Voltage protection level line-PG for In C2	Up	≤500V	≤500V
Voltage protection level line-line for In C2(PoE)	Up	≤600V	≤600V
Insertion loss at 250 MHz		≤3 dB	≤3 dB
Capacitance line-line	C	≤30 pF	≤30 pF
capacitance line-PG	C	≤25 pF	≤25 pF
Operating temperature range	Tu	-40°C...+80°C	-40°C...+80°C
For mounting on		35mm DIN rails acc. to EN 60715	35mm DIN rails acc. to EN 60715
Connection (input/output)		RJ45 socket/RJ45 socket	RJ45 socket/RJ45 socket
Pinning		1/2, 3/6, 4/5, 7/8	1/2, 3/6, 4/5, 7/8
Earthing via		35mm DIN rails acc. to EN 60715	35mm DIN rails acc. to EN 60715
Enclosure material		polyamide PA 6.6	
Degree of protection (plugged-in)		IP 10	IP 10
Order Code		D9160	D9161

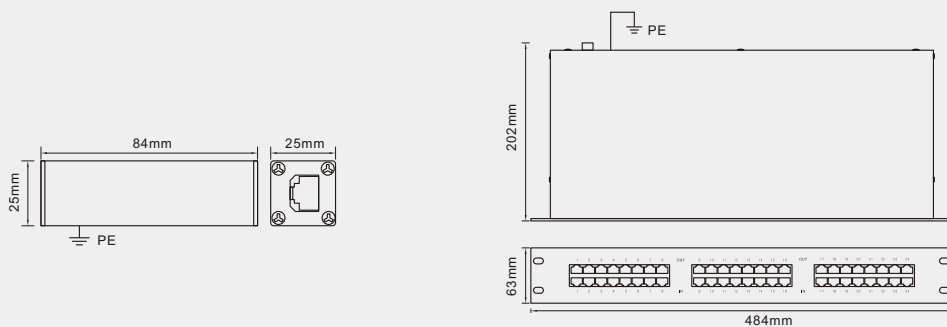


SPDs for general information BRGI-2L



		BRGI-2L-6	BRGI-2L-12	BRGI-2L-24	BRGI-2L-48	BRGI-2L-60	BRGI-2L-180
Test standards		IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21
Nominal voltage	Un	6V	12V	24V	48V	60V	180V
Max. continuous operating d.c. voltage	Uc	8V	15V	29V	56V	70V	180V
Max. continuous operating a.c. voltage	Uc	5V	11V	20V	40V	49V	130V
Nominal current	IL	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A
C2 Nominal discharge current(8/20µs) per line	In	5kA	5kA	5kA	5kA	5kA	5kA
Voltage protection level [line–line]	Up	≤30V	≤40V	≤60V	≤100V	≤130V	≤320V
Voltage protection level [line–PG]	Up	≤600V	≤600V	≤600V	≤600V	≤600V	≤600V
Response time [line–line]	tA	≤1ns	≤1ns	≤1ns	≤1ns	≤1ns	≤1ns
Response time [line–PG]	tA	≤100ns	≤100ns	≤100ns	≤100ns	≤100ns	≤100ns
Operating temperature range	TU	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C
Connection input/output		Terminal Block	Terminal Block	Terminal Block	Terminal Block	Terminal Block	Terminal Block
Bandwidth		10 Mbps	10 Mbps	10 Mbps	10 Mbps	10 Mbps	10 Mbps
Insertion Loss		≤0.3dB	≤0.3dB	≤0.3dB	≤0.3dB	≤0.3dB	≤0.3dB
Enclosure material		aluminium alloy					
Degree of protection		IP20	IP20	IP20	IP20	IP20	IP20
Order Code 1port		D9001	D9002	D9003	D9004	D9005	D9006
Order Code 24ports		D9007	D9008	D9009	D9010	D9011	D9012

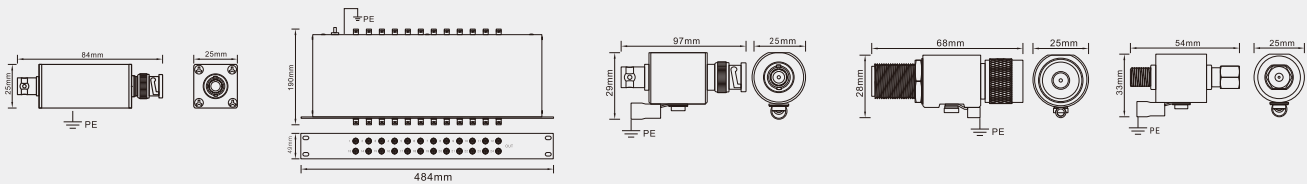
SPDs for RJ BR-RJ45/RJ11



	BRRJ45L-4L	BRRJ45H-8L	BRRJ45L-4LR	BRRJ11L-2L	BRRJ11H-4L
Test standards	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21
Nominal voltage	Un	5V	5V	5V	110V
Max. continuous operating d.c. voltage	Uc	6V	6V	6V	170V
Max. continuous operating a.c. voltage	Uc	4V	4V	4V	120V
Nominal current	IL	0.5A	0.5A	0.5A	0.5A
C2 Nominal discharge current(8/20µs) per line	In	5kA	5kA	5kA	5kA
Voltage protection level [line–line]	Up	≤30V	≤30V	≤30V	≤250V
Voltage protection level [line–PG]	Up	≤500V	≤500V	≤500V	≤600V
Response time [line–line]	tA	≤1ns	≤1ns	≤1ns	≤1ns
Response time [line–PG]	tA	≤100ns	≤100ns	≤100ns	≤100ns
Operating temperature range	TU	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C
Connection input/output	RJ45 socket 4 line	RJ45 socket 8 line	RJ45 24 sockets	RJ11 socket 2 line	RJ11 socket 4 line
Bandwidth		30 Mbps	300 Mbps	30 Mbps	10 Mbps
Insertion Loss		≤0.3dB	≤0.3dB	≤0.3dB	≤0.3dB
Enclosure material	aluminium alloy				
Degree of protection	IP20	IP20	IP20	IP20	IP20
Order Code	D9030	D9031	D9032	D9033	D9034



SPDs for Coaxial



BR-BNC

BR-BNC-R

BR-BNC-H

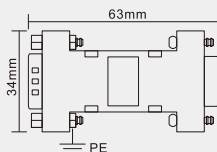
BR-N

BR-F

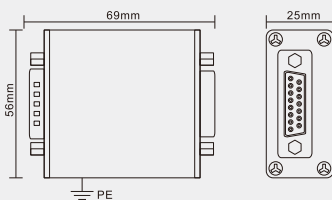
		BR-BNC	BR-BNC-R	BR-BNC-H	BR-N	BR-F
Test standards		IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21
Nominal voltage	Un	5V	5V	–	–	–
Max. continuous operating d.c. voltage	Uc	6V	6V	180V	180V	180V
Max. continuous operating a.c. voltage	Uc	4V	4V	130V	130V	130V
Nominal current IL	IL	0.5A	0.5A	20A	20A	20A
C2 Nominal discharge current(8/20µs) line–shield	In	5kA	5kA	–	–	–
C2 Nominal discharge current(8/20µs) shield–PG	In	10kA	10kA	–	–	–
C2 Nominal discharge current(8/20µs) line–shield/PG	In	–	–	10kA	10kA	10kA
Voltage protection level [line–shield]	Up	≤30V	≤30V	–	–	–
Voltage protection level [shield–PG]	Up	≤500V	≤500V	–	–	–
Voltage protection level [line–shield/PG]	Up	–	–	≤800V	≤800V	≤800V
Response time [line–shield]	tA	≤1ns	≤1ns	–	–	–
Response time [shield–PG]	tA	≤100ns	≤100ns	–	–	–
Response time [line–shield/PG]	tA	–	–	≤100ns	≤100ns	≤100ns
Operating temperature range	TU	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C	–40°C...+80°C
Connection input/output		BNC socket	BNC 24 sockets	BNC socket	N socket	F socket
Bandwidth		10 Mbps	10 Mbps	3 Gbps	3 Gbps	3 Gbps
Insertion Loss		≤0.3dB	≤0.3dB	≤0.3dB	≤0.3dB	≤0.3dB
Impedience		50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
Enclosure material		aluminium alloy	aluminium alloy	Steel	Steel	Steel
Degree of protection		IP20	IP20	IP20	IP20	IP20
Order Code		D9020	D9021	D9022	D9023	D9024



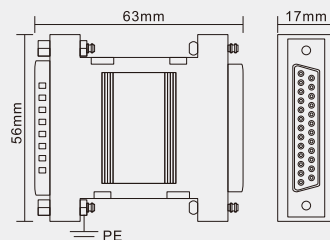
SPDs for D-Sub BR-DB



BR-DB9



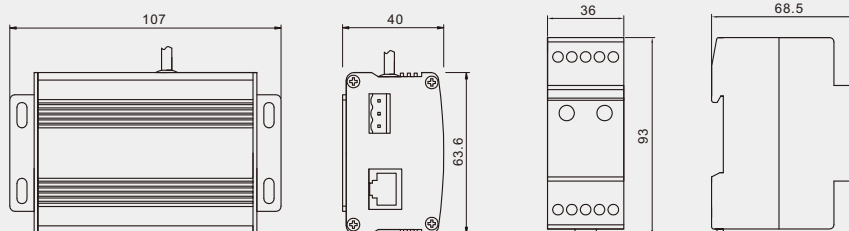
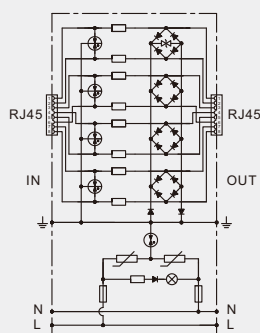
BR-DB15



BR-DB25

		BR-DB9	BR-DB15	BR-DB25
Test standards		IEC 61643-21	IEC 61643-21	IEC 61643-21
Nominal voltage	Un	12V	12V	12V
Max. continuous operating d.c. voltage	Uc	15V	15V	15V
C2 Nominal discharge current(8/20µs) line-SG	In	5kA	5kA	5kA
C2 Nominal discharge current(8/20µs) SG-PG	In	10kA	10kA	10kA
Voltage protection level [line-SG]	Up	≤40V	≤40V	≤40V
Voltage protection level [SG-PG]	Up	≤500V	≤500V	≤500V
Response time [line-SG]	tA	≤1ns	≤1ns	≤1ns
Response time [SG-PG]	tA	≤100ns	≤100ns	≤100ns
Operating temperature range	TU	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C
Connection input/output		D-Sub 9 plug/socket	D-Sub 15 plug/socket	D-Sub 25 plug/socket
Pinning		line:3/8, SG:5, PG:1	line:2/9,4/11, SG:8, PG:1	line:2/3/4/5/6/8/20, SG:7
Bandwidth		10 Mbps	10 Mbps	10 Mbps
Insertion Loss		≤0.3dB	≤0.3dB	≤0.3dB
Enclosure material		aluminium alloy		
Degree of protection		IP20	IP20	IP20
Order Code		D9070	D9071	D9072

SPDs for CCTV CCTV-21



	CCTV-21M-48	CCTV-21M-230	CCTV-21P-48	CCTV-21P-230
Test standards	IEC 61643-21	IEC 61643-21	IEC 61643-21	IEC 61643-21
Max. continuous operating d.c. voltage $(_{RJ45})U_c$	6V	6V	6V	6V
Max. continuous operating a.c. voltage $(_{RJ45})U_c$	4V	4V	4V	4V
Max. continuous operating a.c. voltage $(_{power})U_c$	60V	275V	60V	275V
Nominal current IL	0.5A	0.5A	0.5A	0.5A
C2 Nominal discharge current(8/20 μ s) I_n	5kA	5kA	5kA	5kA
C2 Max. discharge current(8/20 μ s) I_{max}	10kA	10kA	10kA	10kA
Voltage protection level [line-line/shield] $(_{RJ45})U_p$	$\leq 30V$	$\leq 30V$	$\leq 30V$	$\leq 30V$
Voltage protection level [line/shield-PG] $(_{RJ45})U_p$	$\leq 500V$	$\leq 500V$	$\leq 500V$	$\leq 500V$
Voltage protection level $(_{power})U_p$	$\leq 200V$	$\leq 1.2kV$	$\leq 200V$	$\leq 1.2kV$
Response time [line-line/shield] t_A	$\leq 1ns$	$\leq 1ns$	$\leq 1ns$	$\leq 1ns$
Response time [line/shield-PG] t_A	$\leq 100ns$	$\leq 100ns$	$\leq 100ns$	$\leq 100ns$
Operating temperature range TU	-40 $^{\circ}C$...+80 $^{\circ}C$	-40 $^{\circ}C$...+80 $^{\circ}C$	-40 $^{\circ}C$...+80 $^{\circ}C$	-40 $^{\circ}C$...+80 $^{\circ}C$
Connection input/output RJ45/Power	RJ45/Terminal block	RJ45/Terminal block	RJ45/Terminal block	RJ45/Terminal block
Bandwidth	30 Mbps	30 Mbps	30 Mbps	30 Mbps
Insertion Loss	$\leq 0.3dB$	$\leq 0.3dB$	$\leq 0.3dB$	$\leq 0.3dB$
Enclosure material	aluminium alloy	aluminium alloy	Thermal plastic	Thermal plastic
Degree of protection	IP20	IP20		
Order Code	D9050	D9051	D9052	D9053