## The protection you rely on



Our complete line of Bussmann series surge protective solutions helps provide power that's free from damaging surges.

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## **13** — Surge protective devices

### Selecting a Type 1 SPD

#### **Electrical systems and connections**

Step 1: Review the following system diagrams that show the SPD connection points for the Bussmann series SPD models that may be applied.

Step 2: Locate the system diagram that matches your application, note the applicable SPD model numbers and then proceed to the product pages for their details.

Understanding the following will help assure that the correct surge protective device is specified:

- Typical North American electrical systems include single-phase, split-phase, Delta and Wye.
- · Selecting the wrong SPD generally arises from misunderstanding the nominal system voltage, ground and neutral connections.
- · General convention has it that a "ground" wire is not counted as a wire in the system description (e.g., 3 wire, 4 wire, etc.), but it is counted as a connection point if the SPD has a ground wire.
- Selecting a voltage rating for Wye systems must be based upon its nominal system voltage rating and not on the leg-to-leg voltages.
- · Bonded N-G configurations do not require protection at the service entrance transformer, but protection is suggested in downstream bonded N-G systems if the length of conductor making the bond is greater than 10 feet (3m).

panel

connection.

#### Two wire single-phase -2 connection points

Application: Sub-panel or feeder panel

Volts: 120, 240 (L-N)

Note: Must be installed within 10 feet (3m) of a bonded neutral ground connection per IEEE C62.41-1991.



#### SPD catalog numbers:

- BSPA
  - · Specify from build-a-code catalog number system
- SurgePOD<sup>™</sup> PRO

13-2

SPP40SP1120SN

### uuu Dedicated one-pole cuit brea sible White Gree

Three wire split-phase/two-

pole - 3 connection points

Application: Service entrance

#### SPD catalog numbers:

- BSPA
  - · Specify from build-a-code catalog number system

#### Three wire split-phase/twopole - 3 connection points

Application: Sub-panel or feeder panel

Volts: 120, 240 (L-N), 240, 480 (L1-L2)

Note: Installation at or less than 10 feet (3m) from the transformer and within 10 feet (3m) of a bonded-neutral ground



### BSPA

SPD catalog numbers:

- · Specify from build-a-code catalog number system
- SurgePOD PRO
  - SPP40SP2240PN

#### Three wire split-phase/twopole plus ground -4 connection points

Application: Service entrance equipment

Volts: 120, 240 (L-N), 240 (L1-L2)

Note: Installation where greater than 10 feet (3m) of a bondedneutral ground connection.



#### SPD catalog numbers:

- BSPA
  - Specify from build-a-code catalog number system

Volts: 120, 240 (L-N) Note: Installation for where the SPD is greater than 10 feet (3m) from a bonded neutral-ground connection.



BSPD high capacity







#### **BUSSMANN** EAT•N

#### Three wire split-phase/twopole plus ground -4 connection points

Application: Sub-panel or feeder panel

Volts: 120, 240 (L-N), 240 (L1-L2)

Note: For installation greater than 10 feet (3m) of a bondedneutral ground connection.



#### SPD catalog numbers:

- BSPA
  - Specify from build-a-code catalog number system

#### Three wire Wye plus around - 4 connection points

Application: Sub-panel or feeder panel

Volts: 208, 480, 600 (L-L)

Note: A common MCC configuration for pumping and water/waste water treatment.



#### SPD catalog numbers:

- BSPA
  - Specify from build-a-code • catalog number system
- SurgePOD PRO SPP40SP3208WYG
  - SPP4SP3480WYG

#### Four wire Wye plus ground -5 connection points

Application: Service entrance equipment

Volts: 120, 127, 277, 347 (L-N), 208, 220, 480, 600 (L-L)

Note: Common system configuration with Neutral pulled into facility and bonded to ground.



#### SPD catalog numbers:

- BSPA
  - Specify from build-a-code catalog number system
- BSPD
  - · Specify from build-a-code catalog number system

## Four wire Wye plus ground -

Surge protective devices — 13

5 connection points

Application: Sub-panel or feeder panel

Volts: 120, 127, 277, 347 (L-N), 208, 220, 480, 600 (L-L)

Note: Common system configuration with Neutral pulled into facility and bonded to ground.



#### SPD catalog numbers:

- BSPA
  - Specify from build-a-code . catalog number system
- BSPD
  - Specify from build-a-code . catalog number system

#### Three wire Delta plus ground - 4 connection points

Application: Service entrance equipment, sub-panel or feeder panel

Volts: 240, 480, 600 (L-L)



#### SPD catalog numbers:

- BSPA
  - Specify from build-a-code catalog number system
- BSPD
  - Specify from build-a-code catalog number system

### SurgePOD<sup>™</sup> PRO for UL 1449 4<sup>th</sup> Edition Listed loadside and lineside protection

The Bussmann series SurgePOD PRO is a Type 1 UL Listed 1449 4<sup>th</sup> Edition surge protective device suitable for installation on both the loadside or lineside of the service entrance overcurrent protective device and is well suited for light commercial and residential applications.

Available in popular voltage and system specific versions to match common residential and light commercial electrical system and equipment requirements. The SurgePOD PRO delivers superior surge protection using MOV thermal disconnect technology that eliminates the need for additional overcurrent protection.



SurgePC



LED Status Indicator

Parallel connection to the electrical system permits the SurgePOD PRO SPD to be installed on any ampacity panel.

- Type 1 UL 1449 4th Edition Listed SPDs are easily selected and installed on the loadside or lineside of the service entrance overcurrent protective device
- Voltage specific models precisely match and protect electrical systems and equipment better than "one-size-fits-all" SPDs
- Thermal disconnect technology eliminates the need for additional fusing
- NEMA 4X enclosure for indoor or outdoor applications
- easyID<sup>™</sup> LED status indicator provides surge protection status at a alance

#### Dimensions — in





#### Mounting

SurgePOD PRO is a panel mount device. It may also be mounted using a customer supplied bracket or directly onto a female threaded conduit fitting.



Catalog no.		
SPP40SP1120SN	SPP40SP3240DLG	SPP40SP3208WYG
SPP40SP2240PN	SPP40SP3480DLG	SPP40SP3480WYG
SPP40SP3600WYG		

See catalog number explanation below for details.

#### Catalog number explanation

This is not a build-a-code for configuring an orderable catalog number. It's purpose is to show what portions of the catalog number denotes which specification.

	<u>SPP</u> <u>40S</u>	
SPP = Product family		
Surge rating		
<ul> <li>40 kA surge current capacity</li> </ul>		
Number of wires		
• P1 = 1, P2 = 2, P3 = 3		
System voltage (Vac)		
• 120, 208, 240, 480, 600		

System type/wires and connection points -

- SN = Single-phase 2 wire, 2 connection points
- PN = Split-phase 3 wire , 3 connection points
- DLG = Three-phase Delta 3 wire + G, 4 connection points
- WYG = Three-phase Wye 3 wire + G, 4 connection points

#### easyID<sup>™</sup> LED status indicator

The easyID LED status indicator will illuminate when the unit is properly installed and the system or equipment being protected is energized. The following LED color/status indicates:

#### **GREEN LED = Good**

The circuit is energized and protected.

#### **RED LED = Replace**

The circuit is energized and unprotected. The unit needs replacing.

#### LED is Out / Unlit:

The circuit is most likely deenergized

The unit's leads are disconnected

The unit is damaged

Authorized personnel should follow all prescribed lockout/tagout and safety procedures in troubleshooting the cause for the above conditions. Opening SurgePOD PRO enclosure will void the warranty.

#### Data sheet no. 10033

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#### SurgePOD PRO

Catalog no.	Nominal system voltage	Max. continuous operating AC voltage (MCOV) (V <sub>c</sub> )	System type	Connection points
SPP40SP1120SN	120	150	Single-phase 2 wire	2
SPP40SP2240PN	120/240	150	Split-phase 3 wire	3
SPP40SP3240DLG	240	320	Three-phase Delta 3 wire + G	4
SPP40SP3480DLG	480	550	Three-phase Delta 3 wire + G	4
SPP40SP3208WYG	208	150	Three-phase Wye 3 wire + G	4
SPP40SP3480WYG	480	320	Three-phase Wye 3 wire + G	4
SPP40SP3600WYG*	600	420	Three-phase Wye 3 wire + G	4

\* Not CSA Certified.

Specifications (for all SurgePOD PRO units)	Values	
Short-Circuit Current Rating (SCCR)	200 kA	
Nominal discharge current (8x20µs) (I,)	10 kA	
Surge current capacity (8x20µs) (I <sub>max</sub> )	40 kA	
Response time (ns) $(t_A)$	<25ns	
Frequency	50/60 Hz	đ
Operating state/fault indication	Bi-color LED - green (good) / red (replace)	ctiv
Conductor length / gauge	18 inches, 10 AWG stranded tinned copper	otec
Mounting	Chase nipple / bracket*	e pr
Enclosure / flammability ratings	NEMA 4X - UL 94-5VA	urge
Degree of protection (installed state)	IP20 (finger-safe)	S
SPD install location	Indoor/outdoor	
Circuit location	Lineside or loadside of service entrance overcurrent protective device	
Operating temperature	-40°C to +65°C	
Maximum operating altitude	12,000FT	
Agency information	UL Listed, CSA Certified, RoHS compliant	
Standard	UL Type 1 1449 4th Edition SPD	
Warranty	Two years**	

\* Customer-supplied bracket.

\*\*See Limited Warranty Statement 3A1502 for details at Eaton.com/bussmannseries.

#### Voltage protection ratings (VPR)

	Nominal system		Volta	ge Protection Ratings (	VPR)
Catalog no.	voltage	MCOV (V <sub>c</sub> )	L-N	L-L	L-G
SPP40SP1120SN	120	150	700	—	—
SPP40SP2240PN	120V/240	150	700	1200	—
SPP40SP3240DLG	240	320	—	2500	1200
SPP40SP3480DLG	480	550	—	3000	1800
SPP40SP3208WYG	208	150 <sup>+</sup>	—	1200	700
SPP40SP3480WYG	480	320 <sup>†</sup>	_	2500	1200
SPP40SP3600WYG	600	420 <sup>†</sup>	_	2500	1500

† SPD voltages are measured from Line-to-Neutral, or Line-to-Ground on systems where there is no neutral present. These units do not have a line-to-neutral, so the lineto-ground voltage is 120 V for the 208 V Wye L-G and 277 V for the 480 V L-G, making the normal voltage applied to the unit less than the MCOV values listed in the table.

### BSPA NEMA 4X Type 1 and 2

The Bussmann series BSPA surge protective devices are UL 1449 4<sup>th</sup> Edition surge protectors. Application of BSPA units throughout a facility will help ensure that equipment is protected from damaging surges.



The BSPA compact NEMA 4X enclosure allows for installation external to an electrical assembly in a variety of environments.

BSPA units are available in all common voltage and system configurations, and in a variety of peak surge current capacity ratings from 50 through 200 kA per phase. Several feature package options (filtering, audible alarm and Form C contacts) extend application flexibility along with a range of configurable options suitable for most commercial and light industrial applications covering service entrances, distribution panelboards and point-of-use applications.

#### Agency information

- UL 1449 4th Edition Type 1 and Type 2
- UL 1283 6th Edition
- Canadian Standards Association (CSAT) Type 1 and Type 2
- CSA C22.2 No. 269.1-14 for Type 1 SPD, CSA C22.2 No. 269.2-13 for Type 2 SPD, CSA C22.2 No. 8-13 for EMI filter
- RoHS compliant

#### Features

- Thermally-protected metal oxide varistor (MOV) technology
- Tri-colored LED status indicators display continuous self-diagnostic testing, including neutral-ground mode
- + 20 kA nominal discharge current (I\_,) rating (maximum rating in the UL 1449  $4^{\underline{\rm th}}$  Edition standard)
- 50 through 200 kA per phase peak surge current capacity ratings
- · Configure to order with five feature/option combinations
- Corrosion-resistant NEMA 4X enclosure with detachable mounting feet
- 200 kA short-circuit current rating (SCCR)
- · Factory wired with 36-inch 10 AWG leads
- Optional Form C contact relay for integration into remote monitoring systems\*
- Optional EMI/RFI filtering form improved power quality\*
- Optional audible alarm\*
- · No user-serviceable parts or items requiring periodic maintenance
- Ten-year warranty
- \* See catalog number system for availability.

#### Catalog number system

The catalog numbering system permits specifying any combination to meet requirements.

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	<u>BSPA 200 208Y 8</u>	<u>P</u>		
	BSPA = Product family			
	Surge rating per phase			
	• 050 = 50 kA per phase			
	• 100 = 100 kA per phase			
	• 150 = 150 kA per phase			
ISSNA LT A	• 200 = 200 kA per phase			
	Voltage/system code			
ty ratings	• 120N = 120 V single-phase (2W +G)			
ation	• 240N = 240 V single-phase (2W +G)			
e tor ervice	• 240S = 120/240 V split-phase (3W +G)			
• 240D = 240 V Delta (3W + G)				
	• 480D = 480 V Delta (3W + G)			
	• 600D = 600 V Delta (3W + G)			
	• 208Y = 120/208 V Wye (4W + G)			
	• 415Y = 240/415 V Wye (4W + G)			
	• 480Y = 277/480 V Wye (4W + G)			
269.2-13	• 600Y = 347/600 V Wye (4W + G)			
	Options			
	• 1 = No options (standard configuration), Type 1			
	• 4 = Form C relay, Type 1			
IY	<ul> <li>5 = Audible alarm and Form C relay, Type 1</li> </ul>			

- 7 = EMI filtering and Form C relay, Type 2
- 8 = EMI filtering, audible alarm and Form C relay, Type 2

#### NEMA enclosure

• P = NEMA 4X





BSPA wire port and conductors

BSPA with mounting feet

Data sheet no. 10661

#### **ETON** BUSSMANN SERIES

#### **BSPA** configurations

The BSPA allows for selecting along with the standard features the audible alarm, Form C relay contacts and EMI/RFI filtering options shown in table 1.

#### **Configurable features**

Feature	Standard	Options
Surge protection using thermally protected MOV technology	•	
Tri-colored LED protection status indicators for each phase	٠	
Tri-colored LED protection status indicators for the neutral-ground protection mode	٠	
Audible alarm		٠
Form C relay contact		•
EMI/RFI filtering, for up to 40 dB of noise atten- uation from 10 kHz to 100 MHz*		•

\* Available on Type 2 SPD units only.

#### **Tri-colored LED status indicators**

These LED indicators show continuous self-diagnostic testing, including neutral-ground mode and display:

- Green—Fully protected
- Yellow—Loss of neutral-to-ground protection
- Red—Loss of protection



LED protection status indicators showing full protection and phase faults

#### Enclosure ratings, options, dimensions and weights

The BSPA NEMA 4X enclosure is supplied with mounting feet to facilitate installation in a variety of applications. There are two enclosure sizes, P1 and P2, dependent on the voltage code and surge rating.

#### Available optional equipment

Available option	Catalog no.
Flush mount plate for P1 enclosure	BSPA-FLUSHPLT1
Flush mount plate for P2 enclosure	BSPA-FLUSHPLT2

#### BSPA voltage configurations per enclosure size\*

P1 enclosure		P2 enclosure	
Voltage code	kA	Voltage code	kA
120N/240N	50-200	240S	
240S		208Y/415Y/480Y/600Y	120–200
208Y/415Y/480Y/600Y	50-100	240D/480D	-
240D/480D	-	600D	50-200

\* See catalog number system for voltage code details.

### Surge protective devices — 13

## Voltage protection ratings (VPRs) per ANSI/UL 1449 4<sup>th</sup> Edition

Voltage		Protecti	on mode		
code	L–N	L–G	N–G	L-L	
50 kA unit V	'PR				
120N	700	1200	700	_	_
240N	1200	2000	1500	_	_
240S	700	1200	700	1200	_
208Y	700	1200	700	1200	
415Y	1200	2000	1500	2000	
480Y	1200	2000	1500	2000	_
600Y	1500	1500	1500	2500	_
240D		1000	_	1000	
480D	_	2000	_	2500	
600D		2500	_	2500	_
100 kA unit	VPR				
120N	600	600	600	_	_
240N	1200	1200	1200	_	۵
240S	600	600	600	1000	ctiv
208Y	600	600	600	1000	rote
415Y	1200	1200	1200	2000	ge p
480Y	1200	1200	1200	2000	Sur
600Y	1500	1500	1500	2500	
240D	—	1000	—	1000	
480D	_	2000	—	2500	_
600D	_	2500	_	2500	_
150-200 kA u	unit VPR				
120N	700	700	700	—	
240N	1000	1200	1000	_	
240S	700	700	700	1200	_
208Y	700	700	700	1200	_
415Y	1200	1200	1200	2000	_
480Y	1200	1200	1200	2000	_
600Y	1500	1500	1500	2500	_
240D	_	1000	_	1000	_
480D		1800	_	2000	_
600D		2500		2500	

## 13 — Surge protective devices



#### **BSPA** specifications

Description		Value
Loade	Length	36"
	Size	10 AWG stranded copper
Mounting		Chase nipple/panel (with mounting feet)
Peak surge current capacity ratings available		50, 100, 150, 200 kA per phase
Nominal discharge current (In)		20 kA
Short-circuit current rating (SCCR)		200 kA
Single-phase voltages available (2W + G)		120, 240
Split-phase voltages available (3W +G)		120/240
Three-phase Wye system voltages available (4W + G)		120/208, 240/415, 277/480, 347/600
Three-phase Delta system voltages available (3W + G)		240, 480, 600
Input power frequency		50/60 Hz
	Single-phase	L–N, N–G, L–G
Dratation modes	Split-phase	L–N, N–G, L–G, L–L
Protection modes	Wye	L–N, N–G, L–G, L–L
	Delta	L-G, L-L
	Voltage code	
	120N	150 L–N, 150 L–G, 150 N–G
	240N	320 L–N, 320 L–G, 320 N–G
	240S, 208Y	150 L–N, 150 L–G, 150 N–G, 300 L–L
Maximum continuous operating voltage (MCOV):	415Y, 480Y	320 L–N, 320 L–G, 320 N–G, 640 L–L
	600Y	420 L-N, 420 L-G, 420 N-G, 840 L-L
	240D	320 L-G, 300 L-L
480D 600D		550 L–G, 640 L–L
		840 L-G, 840 L-L
Ports		1
Operating and storage temperature		-40°F to +140°F (-40°C to +60°C)
Operating humidity		5% through 95%, non-condensing
Operating altitude		Up to 2000 m (6561 ft)
Agency information		UL 1449 4 <sup>th</sup> edition, UL 1283 6th edition, CSA C22.2 No. 269.1-14 for Type 1 SPD, CSA C22.2 No. 269.2-13 for Type 2 SPD, CSA C22.2 No. 8-13 for EMI filter
Durability/repetitive strike test		Passed 12,000 strikes to ANSI/IEEE C62.41 (20 kV, 10 kA) Category C waveform
SPD type		UL 1449 4 <sup>th</sup> edition and CSA Type 1 and Type 2 SPD (dependent on feature options)
Enclosure dimensions and weights		Refer to Figure 1 and Figure 3 for enclosure dimensions and weights
Enclosure rating		NEMA 4X enclosure*
Form C relay contact ratings		2 A at 30 Vdc or 250 Vac
		Power ON, normal state—NO contact = open, NC contact = closed
FORTH C TERAY CONTACT LOGIC		Power OFF or fault state—NO contact = closed, NC contact = open
EMI/RFI filtering attenuation		Up to 40 dB from 10 kHz to 100 MHz
RoHS compliant		Yes
Warranty		Ten years standard

\* Mounting feet required to achieve NEMA 4X rating.



#### Dimensions — in (mm)



P1 enclosure, NEMA 4X with mounting feet dimensions, weight = 2.5 lb



P2 enclosure, NEMA 4X with mounting feet dimensions, weight = 4 lb



Optional flush mount plate for P1 enclosure (catalog number BSPA-FLUSHPLT1)



Optional flush mount plate for P2 enclosure (catalog number BSPA-FLUSHPLT2)

### BSPD high capacity Type 1 and 2

**BSPD Surge Protective Devices** (SPDs) are UL Listed 1449 4th Edition Type 1 or UL Recognized 1283 5th Edition Type 2 surge protectors, depending on the configuration. The BSPD is available for installation external to an electrical enclosure or panelboard. Application of BSPD units throughout a facility will help ensure that equipment is protected.

BSPD units are available for common Delta and Wye voltage systems in a variety of surge current capacity ratings from 120 kA through 400 kA. Available in three configurations, the BSPD's configurations and options make it easy to specify units for many electrical applications; including service entrances, distribution switchboards, panelboards and point-of-use.

- Basic, Standard and Standard with Surge Counter configurations UL Listed 1449 4<sup>th</sup> Edition, Guide VZCA, File E316410, CSA Certified Notice 516 File 243397
- Standard and Standard with Surge Counter configurations are also UL Recognized 1283 5<sup>th</sup> Edition, Guide VZCA2, File E316410, CSA Component Acceptance Std. C22.2
- RoHS compliant
- 20 kA nominal discharge current (I,) rating (maximum rating assigned by UL)
- 120 kA through 400 kA per phase surge current capacity (I<sub>max</sub>) ratings
- 200 kA Short-Circuit Current Rating (SCCR)
- Two color LED status indicators for each phase on Delta and Wye units, plus N-G on Wye units
- 10-Year warranty

#### Configurations

The BSPD provides users with the option of selecting between three configurations:

- Basic (Type 1)
- Standard with Form C contact and EMI/RFI filter (Type 2)
- Standard with Surge Counter (Type 2)

The appropriate configuration can be specified from the catalog number system based on the application's requirements or specifications.



NEMA 1 steel enclosure 120 kA and 200 kA maximum surge current capacity



NEMA 1 steel enclosure 300 kA and 400 kA maximum surge current capacity



NEMA 4X 304 Stainless Steel enclosure, all surge current capacities

Catalog number system

The catalog numbering system permits specifying any combination to meet requirements.

	<b>BSPD</b>	<u>200</u>	<u>480D</u>	<u>2</u>	K
BSPD = Product family —					

Surge rating per phase -

- 120 = 120 kA
- 200 = 200 kA
- 300 = 300 kA
- 400 = 400 kA

#### Voltage/system code

- 208Y = 120/208 Wye (4W + G)
- 480Y = 277/480 Wye (4W + G)
- 600Y = 347/600 Wye (4W + G)
- 240D = 240 Delta (3W + G)
- 480D = 480 Delta (3W + G)
- 600D = 600 Delta (3W + G)
- **Configurations** -
- 1 = Basic
  - Green and red LEDs per phase to indicate protection status.
  - Green and red LEDs on Wye units to indicate protection status of the neutral-to-ground mode
- 2 = Standard
  - Green and red LEDs per phase to indicate protection status
  - Green and red LEDs on Wye units to indicate protection status of the neutral-to-ground mode
  - Audible alarm with silence button
  - Form C contact relay
  - EMI/RFI filtering providing up to 50 dB of noise attenuation from 10 kHz to 100 MHz
- 3 = Standard With Surge Counter
  - Green and red LEDs per phase to indicate protection status
  - Green and red LEDs on Wye units to indicate protection status of the neutral-to-ground mode
  - Audible alarm with silence button
  - Form C contact relay
  - EMI/RFI filtering providing up to 50 dB of noise attenuation from 10 kHz to 100 MHz
  - · Surge counter with reset button

#### **NEMA enclosures** -

- K = NEMA 1
- P = NEMA 4X

#### Data sheet no. 10209



**ETON** BUSSMANN SERIES

#### **BSPD** configurations

	Configuration		
Features	Basic (Type 1)	Standard (Type 2)	Standard with Surge Counter (Type 2)
Two color LED protection status indicators for each phase	Х	Х	Х
Two color LED protection status indicators for the neutral-ground protection mode (Wye systems only)	Х	Х	Х
Audible alarm with silence button		Х	Х
Form C contact relay		Х	Х
EMI/RFI filtering, providing up to 50 dB of noise attenuation from 10 kHz to 100 MHz		Х	Х
Surge counter with reset button			X

#### Dimensions — in (mm)





120 kA and 200 kA Units/NEMA 1

120 kA to 400 kA Units/NEMA 4X



300 kA and 400 kA Units/NEMA 1

#### Form C Contact relay wire color codes



Red/white

Orange/white

#### **BSPD** specifications

Description	Values
Available system voltages	
Three-phase Wye	120/208, 277/480 and 347/600
Three-phase Delta	240, 480 and 600
Input power frequency	50/60 Hz
Maximum Continuous Operating Voltage (MCOV)	
208Y, and 240D voltage/system codes	150 L-N,150 L-G, 150 N-G, 300 L-L
480Y Voltage/system code	320 L-N, 320 L-G, 320 N-G, 640 L-L
600Y Voltage/system code	420 L-N, 420 L-G, 420 N-G, 840 L-L
480D Voltage/system code	640 L-G, 640 L-L
600D Voltage/system code	840 L-G, 840 L-L
Short-Circuit Current Rating (SCCR)	200 kA
Nominal discharge current (In)	20 kA
Surge current capacity per phase (I <sub>max</sub> )	120 kA, 200 kA, 300 kA and 400 kA ratings available
SPD Types	
Type 1	Basic configuration, can also be used in Type 2 applications
Type 2	Standard and Standard With Surge Counter configurations
Enclosure types	NEMA 1
	NEMA 4X 304 stainless steel
Ports	1
SPD conductor length/gauge	48" (1.22m) 10 AWG Stranded copper
Form C contact relay (Standard and Standard With .	Surge Counter configurations only)
Contact ratings	150 Vac or 125 Vdc, 1A maximum
Lead length/gauge	48 inches (1.22m) / 14 AWG
Contact logic	Power ON, normal state; N.O. contact = OPEN, N.C. contact = CLOSED Power OFF, fault state; N.O. contact = CLOSED, N.C. contact = OPEN
Power consumption	
	0.5 W — 208Y and 240D voltage/system codes
Basic configuration	1.1 W — 480Y and 480D voltage/system codes
	1.3 W — 600Y and 600D voltage/system codes
Ctore developed	0.6 W — 208Y and 240D voltage/system codes
Standard and Standard with Surge Counter configurations	1.7 W — 480Y, and 480D voltage/system codes
	2.1 W — 600Y and 600D voltage/system codes
Protection modes	
Three-phase Delta	L-G, L-L
Three-phase Wye	L-N, L-G, N-G, L-L
Operating temperature / humidity	-40 to +50°C (-40 to +122°F) / 5% to 95%, non-condensing
Operating altitude - ft (m)	16,000 (5000)
EMI/RFI filtering attenuation	Up to 50 dB from 10 kHz to 100 MHz ( <i>Standard</i> and <i>Standard With Surge Counter</i> configurations)
Weight - Ibs (kg)	
NEMA 1	120-200 kA - 6.8 (3.1)
	300- 400 kA -13.5 (6.1)
NEMA 4X	120-200 kA - 14.6 (6.6)
	300-400 kA - 21.0 (9.5)
Agency information	
Basic, Standard and Standard with Surge Counter configurations	UL Listed 1449 4th Edition File E316410 Guide VZCA, CSA Certified Notice 516 File 243397
Standard and Standard with Surge Counter configurations	UL Recognized 1283 5 <sup>th</sup> Edition File E316410 Guide VZCA2, CSA Component Acceptance Std. C22.2 No. 8-M1986, File 243397
RoHS compliant	Yes
Seismic withstand capability	Meets or exceeds the requirements specific to I.B.C. 2006, C.B.C. 2007 and U.B.C. Zone 4
Warranty	10 Years (see warranty statement 3A1502 for details at Eaton.com/bussmannseries)

Data sheet no. 10209



#### Voltage protection ratings

#### ANSI/UL 1449 4th Edition voltage protection ratings

Voltage Protection Rating (V\_{\_{\rm PR}}) data for all units is included in the following tables, The data varies based upon the configuration and NEMA enclosure.  $V_{_{PR}}$  values for the *Basic* configurations are on the left-hand side of the page. Tables on the right-hand side contain VPR values for the *Standard* or *Standard with Surge Counter* configurations.

#### **NEMA 1: Basic**

Catalog numbers ending with 1K.

#### 120-200 kA

	Protection mode			
Voltage/system code	L-N	L-G	N-G	L-L
208Y	700	700	700	1200
480Y	1200	1200	1200	2000
600Y	1500	1500	1500	2500
240D	—	1000	—	1000
480D	—	2000	_	2500
600D	—	2500	—	2500

#### 300 kA

	Protection mode			
Voltage/system code	L-N	L-G	N-G	L-L
208Y	700	700	700	1000
480Y	1200	1200	1200	1800
600Y	1500	1500	1500	2500
240D	—	1000		1000
480D	_	1800		2000
600D		2500		2500

#### 400 kA

	Protection mode			
Voltage/system code	L-N	L-G	N-G	L-L
208Y	700	700	700	1000
480Y	1200	1200	1200	1800
600Y	1500	1500	1500	2500
240D	—	1000		1000
480D	—	1800	_	2000
600D	_	2500	_	2500

#### NEMA 1: Standard or Standard w/ Surge Counter

Catalog numbers ending with 2K or 3K.

#### 120-200 kA

	Protection mode				
Voltage/system code	L-N	L-G	N-G	L-L	
208Y	600	800	600	1000	-
480Y	1200	1200	1200	1800	-
600Y	1500	1500	1500	2500	
240D		1000	_	1000	e e
480D	_	2500	_	2500	ectiv
600D		2500	_	2500	prot
300 kA					Surge

#### 300 kA

	Protection mode			
Voltage/system code	L-N	L-G	N-G	L-L
208Y	600	700	600	1000
480Y	1000	1200	1000	1800
600Y	1500	1500	1500	2500
240D	—	1000	—	1000
480D	—	1800	—	2000
600D	_	2500	_	2500

#### 400 kA

	Protection mode			
Voltage/system code	L-N	L-G	N-G	L-L
208Y	600	700	600	1000
480Y	1000	1200	1000	1800
600Y	1500	1500	1500	2500
240D	_	1000	—	1000
480D	—	1800	—	2000
600D	_	2500	_	2500



**Protection mode** 

N-G

700

1000

1500

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L-L

1500

2500

2500

1000

2500

2500

L-G

900

1200

1500

1000

2500

2500

### Voltage protection ratings continued

### **NEMA 4X: Basic**

Catalog numbers ending with 1P.

#### 120-200 kA

	Protection mode			
Voltage/system code	L-N	L-G	N-G	L-L
208Y	700	800	700	1200
480Y	1200	1200	1000	2000
600Y	1500	1500	1500	2500
240D	—	1000	—	1000
480D	—	2000	—	2500
600D	—	2500	—	2500

#### 300 kA

#### **Protection mode** L-G Voltage/system code L-N N-G L-L 208Y 700 800 700 1200 480Y 1200 1200 1200 2000 600Y 1500 1500 1500 2500 240D 1000 1000 \_\_\_\_ \_\_\_\_ 480D 1800 2000 \_\_\_\_ \_\_\_\_ 600D 2500 2500 \_\_\_\_ \_\_\_\_

#### **Protection mode** Voltage/system code L-N L-G N-G L-L 208Y 800 900 700 1500 480Y 1200 1200 1000 2000 600Y 1500 1500 1500 2500 240D 1000 1000 \_\_\_\_ \_\_\_\_ 480D \_\_\_\_ 2000 \_\_\_\_ 2000 600D 2500 2500 \_\_\_\_

NEMA 4X: Standard or Standard w/ Surge Counter

L-N

900

1200

1500

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Catalog numbers ending with 2P or 3P.

120-200 kA

208Y

480Y

600Y

240D

480D

600D

300 kA

Voltage/system code

#### 400 kA

	Protection mode			
Voltage/system code	L-N	L-G	N-G	L-L
208Y	700	800	700	1200
480Y	1200	1200	1200	2000
600Y	1500	1500	1500	2500
240D	—	1000	—	1000
480D	—	1800	—	2000
600D	_	2500	_	2500

#### 400 kA

	Protection mode			
Voltage/system code	L-N	L-G	N-G	L-L
208Y	800	900	700	1500
480Y	1200	1200	1000	2000
600Y	1500	1500	1500	2500
240D	—	1000		1000
480D	_	2000		2000
600D	—	2500	_	2500



### Surge protective devices -13

## 1-Pole, UL Type 1 DIN-Rail high SCCR surge protective devices

13-15

## RoHS 2011/65/EU



#### Catalog symbol:

• BSPMA1\_S2GR

#### **Description:**

The Bussmann<sup>™</sup> series one-pole DIN-Rail UL Listed Type 1 surge protective devices feature a high 200 kA SCCR. Replaceable arrestor modules are mechanically coded with the base to ensure against installing an incorrect replacement. The unique module locking system fixes the module to the base, and allows it to be easily replaced without tools by simply depressing the release buttons.

#### Standard local visual status indication:

The module's visual indicator shows the protective status at a glance: green = good, red = replace.

#### **Remote contact signaling:**

The standard three-pole terminal remote Form C contact signaling relay has a floating changeover contact for use as a break or make contact, according to circuit concept.

#### Ratings:

- System volts/types
  - 120 Vac single-phase
  - 240 Vac single-phase
- Short-circuit Current Rating (SCCR) 200 kA

#### Agency information:

- + UL Listed open Type 1, ANSI/ UL 1449  $4^{\rm th}$  Edition, Guide VZCA, VZCA7
- CSA Type 4-1 Component Assembly, C22.2 No. 269.1-14, Class 2157-27
- RoHS compliant

#### Mounting

• 35mm Din-Rail

#### Warranty

Five years





Dimensions — mm

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Surge protective devices

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## 13 — Surge protective devices



Specifications/ordering information			
System voltage/type	120 Vac single-phase	240 Vac single-phase	
Catalog number	BSPMA1120S2GR	BSPMA1240S2GR	
Replacement module catalog number (qty.)	BPMA230UL (1)	BPMA385UL (1)	
SPD class per ANSI/UL 1449 4 <sup>th</sup> Ed.	Open-Ty	pe 1 SPD	
SPD class per CSA - C22.2 No. 269.1-14	Type 4-1 Comp	onent Assembly	
Nominal system voltage (U <sub>N</sub> ) [L-N/L-G]	127 Vac	277 Vac	
Nominal power frequency	50 /	60 Hz	
Max. continuous operating voltage AC (MCOV) [L-L]	230 Vac	385 Vac	
Nominal discharge current (I <sub>n</sub> ) (8x20µs)	20	) kA	
Max. discharge current (I <sub>max</sub> ) (8/20)	50	) kA	
Voltage Protection Rating (VPR) [L-L]	700 V <sub>pk</sub>	1200 V <sub>pk</sub>	
Short Circuit Current Rating (SCCR)	200	0 kA	
Operating temperature range ( $T_{_U}$ ) °F (°C)	-31 to 185 (-35 to 85)		
Operating state / fault indication	Green = good ; Red = replace		
Wire range (60/75°C Cu, solid/stranded)	2-14 AWG (2.5-35 mm <sup>2</sup> )		
Terminal torque — Ib-in (N∙m)	35-45 (4-5.1)		
Mounting	35 mm DIN-Rail per EN 60715		
Enclosure material	Thermoplastic, UL 94 V0		
Protection	IP20 (finger-safe)		
Capacity	1 module(s), DIN 43880		
Agency information	UL Listed, Guide VZCA, VZCA7/CSA Component Acceptance Class 2157-27, RoHS		
Weight - oz (g)	4.13 (117)	4.44 (126)	
Contact signaling			
Signaling type	Floating (dry),	Form C (SPDT)	
NEC Circuits	NEC Class 2 circuits only		
Switching capacity AC (DC)	250 V/5 A (250 V/0.1 A,	125 V/0.2 A, 75 V/0.5 A)	
Wire range (60/75°C Cu, solid/stranded)	16-22 AWG (1.5-0.34mm <sup>2</sup> )		
Terminal torque - Ib-in (N∙m)	1.8	(0.2)	

#### Typical installation/system application:







### Surge protective devices -13

## 2-Pole, UL Type 1 DIN-Rail high SCCR surge protective devices

#### Dimensions — mm

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#### Catalog symbol:

• BSPMA2\_S3GR

#### **Description:**

The Bussmann<sup>™</sup> series two-pole DIN-Rail UL Listed Type 1 surge protective devices feature a high 200 kA SCCR. Replaceable arrestor modules are mechanically coded with the base to ensure against installing an incorrect replacement. The unique module locking system fixes the module to the base, and allows it to be easily replaced without tools by simply depressing the release buttons.

#### Standard local visual status indication:

The module's visual indicator shows the protective status at a glance: green = good, red = replace.

#### Remote contact signaling:

The standard three-pole terminal remote Form C contact signaling relay has a floating changeover contact for use as a break or make contact, according to circuit concept.

#### **Ratings:**

- System volts/types
  - 120/240 Vac split-phase
  - 240/480 Vac split-phase
- Short-circuit Current Rating (SCCR) 200 kA

#### Agency information:

- + UL Listed open Type 1, ANSI/ UL 1449  $4^{\rm th}$  Edition, Guide VZCA, VZCA7
- CSA Type 4-1 Component Assembly, C22.2 No. 269.1-14, Class 2157-27
- · RoHS compliant

#### Mounting

• 35mm Din-Rail

#### Warranty

· Five years





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Surge protective devices

## 13 — Surge protective devices



Specifications/ordering information			
System voltage/type	120/240 Vac split-phase	240/480 Vac split-phase	
Catalog number	BSPMA2240S3GR	BSPMA2480S3GR	
Replacement module catalog number (qty.)	BPMA230UL (2)	BPMA385UL (2)	
SPD class per ANSI/UL 1449 4 <sup>th</sup> Ed.	Open-Ty	pe 1 SPD	
SPD class per CSA - C22.2 No. 269.1-14	Type 4-1 Comp	onent Assembly	
Nominal system voltage (U <sub>N</sub> ) [L-G] / [L-L]	127 Vac / 254 Vac	240 Vac / 480 Vac	
Nominal power frequency	50 /	60 Hz	
Max. continuous operating voltage AC (MCOV) [L-G] / [L-L]	230 Vac / 460 Vac	385 Vac / 770 Vac	
Nominal discharge current (I <sub>n</sub> ) (8x20µs)	20	kA	
Max. discharge current (I <sub>max</sub> ) (8/20)	50	kA	
Voltage Protection Rating (VPR) [L-G] / [L-L]	700 V <sub>pk</sub> / 1500 V <sub>pk</sub>	1200 V <sub>pk</sub> / 2500 V <sub>pk</sub>	
Short Circuit Current Rating (SCCR)	200 kA		
Operating temperature range (T <sub>u</sub> ) °F (°C)	-31 to 185 (-35 to 85)		
Operating state / fault indication	Green = good ; Red = replace		
Wire range (60/75°C Cu, solid/stranded)	2-14 AWG (2.5-25 mm <sup>2</sup> )		
Terminal torque — Ib-in (N∙m)	35-45 (4-5.1)		
Mounting	35mm DIN-Rail per EN 60715		
Enclosure material	Thermoplastic, UL 94 V0		
Protection	IP20 (finger-safe)		
Capacity	2 module(s), DIN 43880		
Agency information	UL Listed, Guide VZCA, VZCA7/CSA Component Acceptance Class 2157-27, RoHS		
Weight - oz (g)	7.94 (225)	8.57 (243)	
Contact signaling			
Signaling type	Floating (dry),	Form C (SPDT)	
NEC® Circuits	NEC Class 2 circuits only		
Switching capacity AC (DC)	250 V/5 A (250 V/0.1 A,	125 V/0.2 A, 75 V/0.5 A)	
Wire range (60/75 °C Cu, solid/stranded)	16-22 AWG (1.5-0.34mm <sup>2</sup> )		
Terminal torque — Ib-in (N•m)	1.8	(0.2)	

#### Typical installation/system application:





### Surge protective devices — 13

## 3-Pole, UL Type 1 DIN-Rail high SCCR surge protective devices

#### Dimensions — mm











Surge protective devices

#### Catalog symbol:

- BSPMA3\_WYGR
- BSPMA3\_DLGR

#### Description:

The Bussmann<sup>™</sup> series three-pole DIN-Rail UL Listed Type 1 surge protective devices feature a high 200 kA SCCR. Replaceable arrestor modules are mechanically coded with the base to ensure against installing an incorrect replacement. The unique module locking system fixes the module to the base, and allows it to be easily replaced without tools by simply depressing the release buttons.

#### Standard local visual status indication:

The module's visual indicator shows the protective status at a glance: green = good, red = replace.

#### **Remote contact signaling:**

The standard three-pole terminal remote Form C contact signaling relay has a floating changeover contact for use as a break or make contact, according to circuit concept. **Ratings:** 

- · System volts/types
  - 120/208 Vac 3-phase Wye
  - 277/480 Vac 3-phase Wye
  - 347/600 Vac 3-phase Wye
  - 240 Vac 3-phase Delta
  - 480 Vac 3-phase Delta
- Short-circuit Current Rating (SCCR) 200 kA

#### Agency information:

- + UL Listed open Type 1, ANSI/ UL 1449  $4^{\rm th}$  Edition, Guide VZCA, VZCA7
- CSA Type 4-1 Component Assembly, C22.2 No. 269.1-14, Class 2157-27
- RoHS compliant

#### Mounting

• 35mm Din-Rail

#### Warranty

· Five years

#### Data sheet no. 10773

## 13 — Surge protective devices



Specifications/ordering info	rmation				
System voltage/type	120/208 Vac 3-phase Wye	277/480 Vac 3-phase Wye	347/600 Vac 3-phase Wye	240 Vac 3-phase Delta	480 Vac 3-phase Delta
Catalog number	BSPMA3208WYGR	BSPMA3480WYGR	BSPMA3600WYGR	BSPMA3240DLGR	BSPMA3480DLGR
Replacement module	BPMA180111 (3)	BPMA385111 (3)	BPMA510111 (3)	BPMA275111 (3)	BPMA550111 (3)
catalog number (qty.)	BI 101A 1000E (3)	DI MASCOCE (S)	BINASIOUE (3)	BI WAZ/SOE (3)	BI MASSOCE (S)
SPD class acc. to ANSI/UL			Open-Type 1 SPD		
1449 4th Ed.					
SPD class acc. to CSA - C22.2 No. 269.1-14		Туре	4-1 Component Assembly		
Nominal system voltage (U <sub>N</sub> ) [L-G] / [L-L]	120 Vac / 208 Vac	277 Vac / 480 Vac	347 Vac / 600 Vac	240 Vac / 240 Vac	480 Vac / 480 Vac
Nominal power frequency			50 / 60 Hz		
Max. continuous operating voltage AC (MCOV) [L-G] / [L-L]	180 Vac / 360 Vac	385 Vac / 770 Vac	510 Vac / 1020 Vac	275 Vac / 550 Vac	550 Vac / 1100 Vac
Nominal discharge current (I_) (8x20µs)			20 kA		
Max. discharge current (I <sub>max</sub> ) (8/20)			50 kA		
Voltage Protection Rating (VPR) [L-G] / [L-L]	600 $\mathrm{V_{pk}}$ / 1200 $\mathrm{V_{pk}}$	1200 $\rm V_{\rm pk}$ / 2500 $\rm V_{\rm pk}$	1500 $\rm V_{\rm pk}$ / 3000 $\rm V_{\rm pk}$	800 $\mathrm{V_{pk}}$ / 1500 $\mathrm{V_{pk}}$	1800 V_{_{pk}} / 3000 V_{_{pk}}
Short Circuit Current Rating (SCCR)			200 kA		
Operating temperature range (T <sub>L</sub> ) °F (°C)		-	31 to 185 (-35 to 85)		
Operating state / fault indication		Gree	n = good ; Red = replace		
Wire range (60/75°C Cu, solid/stranded)		4-	14 AWG (2.5-25 mm²)		
Terminal torque			35-45 (4-5.1)		
Mounting		35 m	m DIN-Rail per EN 60715		
Enclosure material		Th	ermoplastic, UL 94 V0		
Protection			IP20 (finger-safe)		
Capacity		3	module(s), DIN 43880		
Agency information	UL	Listed, Guide VZCA, VZCA7	/CSA Component Acceptan	ce Class 2157-27, RoHS	
Weight - oz (g)	10.93 (310)	12.24 (347)	13.05 (370)	11.46 (325)	13.4 (380)
Contact signaling					
Signaling type		Float	ting (dry), Form C (SPDT)		
NEC Circuits		NE	C Class 2 circuits only		
Switching capacity AC (DC)		250 V/5 A (25	0 V/0.1 A, 125 V/0.2 A, 75 V/	(0.5 A)	
Wire range (60/75°C Cu, solid/stranded)		16-	22 AWG (1.5-0.34mm <sup>2</sup> )		
Terminal torque - Ib-in (N•m)			1.8 (0.2)		

#### Typical installation/system application:









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## 4-Pole, UL Type 1 DIN-Rail high SCCR surge protective devices





• BSPMA4\_WYNGR

#### Description:

The Bussmann<sup>™</sup> series four-pole DIN-Rail UL Listed Type 1 surge protective devices feature a high 200 kA SCCR. Replaceable arrestor modules are mechanically coded with the base to ensure against installing an incorrect replacement. The unique module locking system fixes the module to the base, and allows it to be easily replaced without tools by simply depressing the release buttons.

#### Standard local visual status indication:

The module's visual indicator shows the protective status at a glance: green = good, red = replace.

#### Remote contact signaling:

The standard three-pole terminal remote Form C contact signaling relay has a floating changeover contact for use as a break or make contact, according to circuit concept.

#### Ratings:

- System volts/types
  - 120/208 Vac 3-phase Wye
  - 277/480 Vac 3-phase Wye
- Short-circuit Current Rating (SCCR) 200 kA

#### Agency information:

- UL Listed open Type 1, ANSI/ UL 1449  $4^{\rm th}$  Edition, Guide VZCA, VZCA7
- CSA Type 4-1 Component Assembly, C22.2 No. 269.1-14, Class 2157-27
- RoHS compliant

#### Mounting

• 35mm Din-Rail

#### Warranty

Five years



15.3





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Specifications/ordering information	System volts/catalog no.		
System voltage/type	120/208 Vac 3-phase Wye	277/480 Vac 3-phase Wye	
Catalog number	BSPMA4208WYNGR	BSPMA4480WYNGR	
Replacement module catalog number (qty.)	BPMA180UL (4)	BPMA385UL (3), BPMA180UL (1)	
SPD class acc. to ANSI/UL 1449 4 <sup>th</sup> Ed.	Open-Ty	rpe 1 SPD	
SPD class acc. to CSA - C22.2 No. 269.1-14	Type 4-1 Comp	oonent Assembly	
Nominal system voltage (U <sub>N</sub> ) [L-N] / [L-G] / [L-L] / [N-G]	120 Vac / 120 Vac / 208 Vac / 0 Vac	277 Vac / 277 Vac / 480 Vac / 0 Vac	
Nominal power frequency	50 /	60 Hz	
Max. continuous operating voltage AC (MCOV) [L-N] / [L-G] / [L-L] / [N-G]	180 Vac / 360 Vac / 360 Vac / 180 Vac	385 Vac / 565 Vac / 770 Vac / 180 Vac	
Nominal discharge current (I_) (8x20µs)	20	) kA	
Max. discharge current (I <sub>max</sub> ) (8/20)	50	) kA	
Voltage Protection Rating (VPR) [L-N] / [L-G] / [L-L] / [N-G]	600 V <sub>pk</sub> / 1200 V <sub>pk</sub> / 1200 V <sub>pk</sub> / 600 V <sub>pk</sub>	1200 V <sub>pk</sub> / 1800 V <sub>pk</sub> / 2500 V <sub>pk</sub> / 600 V <sub>pk</sub>	
Short Circuit Current Rating (SCCR)	20	0 kA	
Operating temperature range (T <sub>u</sub> ) °F (°C)	-31 to 185 (-35 to 85)		
Operating state / fault indication	Green = good ; Red = replace		
Wire range (60/75°C Cu, solid/stranded)	4-14 AWG (2.5-25 mm²)		
Terminal torque — Ib-in (N∙m)	35-45 (4-5.1)		
Mounting	35 mm DIN-Rail per EN 60715		
Enclosure material	Thermoplastic, UL 94 V0		
Protection	IP20 (fir	nger-safe)	
Capacity	4 module(s), DIN 43880		
Agency information	UL Listed, Guide VZCA, VZCA7/CSA Ro	Component Acceptance Class 2157-27, bHS	
Weight - oz (g)	13.9 (394)	15.24 (432)	
Contact signaling			
Signaling type	Floating (dry), Form C (SPDT)		
NEC Circuits	NEC Class 2 circuits only		
Switching capacity AC (DC)	250 V/5 A (250 V/0.1 A	125 V/0.2 A, 75 V/0.5 A)	
Wire range (60/75°C Cu, solid/stranded)	16-22 AWG (1.5-0.34mm <sup>2</sup> )		
Terminal torque - Ib-in (N∙m)	1.8	(0.2)	

#### Typical installation/system application:





#### BSPM1A\_\_\_LV(R) low voltage power SPDs

The Bussmann series UL Type 4, 75 Vac/100 Vdc, 120 Vac/200 Vdc single pole, modular surge arresters feature local, *easy*ID<sup>™</sup> visual indication and remote contact signaling. The unique module locking system fixes the protection module to the base part. Modules can be easily replaced without tools by simply depressing the release buttons. Integrated mechanical coding between the base and protection module ensures against installing an incorrect replacement module.



#### LV power system arresters

The features of these single-pole devices are for use as a single device or in combination with other devices for AC and DC voltage systems.

- Surge arrester according to UL 1449 4<sup>th</sup> Edition, Type 4 Component Assembly for use in Type 2 applications helps meet UL 508A requirements\*
- · Proven MOV technology for reliable surge protection
- "Thermo Dynamic Control" SPD monitoring device ensures high reliability against surge events
- Module locking system with module release button make module replacement easy without tools
- Remote signaling of all protection modules make status monitoring easy and accurate in any monitoring scheme
- No additional upstream overcurrent protection necessary to make installation easier and more economical
- Vibration and shock tested according to EN 60068-2 to withstand harsh environments
- \* Except as noted in data sheet no. 2056.

#### **Remote signaling Form C contact**

The remote signaling contact versions have a floating changeover contact for use as a break or make contact for easy adoption in any monitoring application.



#### Dimensions — mm

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#### **Catalog numbers and specifications**

Ordering information — for 75 Vac/100 Vdc to 120 Vac/200 Vdc System volts/catalog no.		s/catalog no.	
System voltage		75 Vac/100 Vdc	120 Vac/200 Vdc
Catalog no. (base + modules)	With remote signaling	BSPM1A75D100LVR	BSPM1A150D200LVR
Replacement modules		BPMA75D100LV	BPMA150D200LV
Specifications			
Max. continuous operating AC voltage $[V_c]$		75 Vac	150 Vac
Voltage protection level [VPL]		≤0.4 kV	≤0.7 kV
Voltage protection level at 5 kA [VPL]		≤0.35 kV	≤0.55 kV
Max. continuous operating DC voltage $[V_c]$		100 Vdc	200 Vdc
Nominal discharge current (8/20µs) [I <sub>n</sub> ] AC		10 kA	15 kA
Nominal discharge current (8/20µs) [I <sub>n</sub> ] DC		10 kA	12.5 kA
Surge current capacity(8/20µs) [I <sub>max</sub> ]		40 kA	40 kA
Temporary overvoltage (TOV)		90 V / 5 sec.	175 V / 5 sec.
Agency information*		UL / cUL, CSA, KEMA	UL / cUL, CSA, KEMA
Specifications — all catalog numbers			
SPD according to EN 61643-11		Тур	le 2
SPD according to IEC 61643-1		Clas	ss II
Response time [t <sub>A</sub> ]		≤25ns	
TOV characteristics		Withstand	
Operating temperature range [T <sub>1</sub> ]		-40°C to +80°C	
Operating state/fault indication		Green (good) / red (replace)	
Number of ports		1	
Cross-sectional area (minimum)		14 AWG solid/stranded	
Cross-sectional area (maximum)		1 AWG solid — 2 AWG stranded	
Mounting		35mm DIN-Rail per EN 60715	
Enclosure material		Thermoplastic, UL 94V0	
Location category		Indoor	
Degree of protection		IP20	
Capacity		1 module,	DIN 43880
Warranty		Five y	ears**
Remote contact signaling			
Remote contact signaling type		Changeov	er contact
AC switching capacity (volts/amps)		250 V/0.5 A	
DC switching capacity (volts/amps)		250 V/0.1 A; 125 \	//0.2 A; 75 V/0.5 A
Conductor ratings / cross-sectional area for reminals	emote contact signal ter-	60/75°C Max. 14 AWG solid/stranded	
Ordering information		Order from catalo	og numbers above

\* Agency information not applicable to DC ratings. \*\*See Limited Warranty Statement 3A1502 for details at Eaton.com/bussmannseries.



#### BSPH2A\_\_\_\_LVR low voltage control SPDs

The Bussmann series UL Type 4 24 Vac/dc, 48 Vac/dc, 60 Vac/ dc, 120 Vac/dc and 230 Vac/ dc, two-pole, modular surge arresters feature local, easyID visual indication and remote contact signaling. The unique module locking system fixes the protection module to the base part. Modules can be easily replaced without tools by simply depressing the release buttons. Integrated mechanical coding between the base and protection module ensures against installing an incorrect replacement module.



#### LV system arresters

The features of these two-pole devices are for use in coordination with other upstream SPDs in UL 508A Applications\*.

- Surge arrester according to UL 1449 4<sup>th</sup> Edition, Type 4 Component Assembly for use in Type 3 applications helps meet UL 508A requirements
- Proven MOV and GDT hybrid technology for reliable surge protection
- "Thermo Dynamic Control" SPD monitoring device ensures high reliability against surge events
- Module locking system with module release button make module replacement easy without tools
- Remote signaling on all protection modules make status monitoring easy and accurate in any monitoring scheme
- No additional upstream overcurrent protection needed so installation is easier and more economical
- Vibration and shock tested according to EN 60068-2 to withstand harsh environments
- \* UL 1449 4th Edition not applicable to DC voltages.

#### **Remote signaling Form C contact**

Remote signaling has a floating changeover contact for use as a break or make contact for easy application in any monitoring system.

#### Dimensions — mm





#### **Catalog numbers and specifications**

Ordering information		System volts/catalog no.			
System voltage	24 Vac/dc	48 Vac/dc	120 Vac/dc		
Max. continuous operating AC voltage (MCOV) [V <sub>c</sub> ]	30 Vac/dc	60 Vac/dc	150 Vac/dc		
Catalog no.(base + modules)	BSPH2A24D24LVR	BSPH2A48D48LVR	BSPH2A150D150LVR		
Replacement Modules	BPHA24D24LV	BPHA48D48LV	BPHA150D150LV		
Specifications					
Nominal AC voltage [V]	24 V	48 V	120 V		
Max. continuous operating AC voltage [V <sub>c</sub> ]	30 V	60 V	150 V		
Max. continuous operating DC voltage [V <sub>c</sub> ]	30 V	60 V	150 V		
Nominal discharge current (8/20µs) [I,]	1 kA	1 kA	2 kA		
Total discharge current (8/20µs) [L+N-Gnd] [I <sub>total</sub> ]	2 kA	2 kA	4 kA		
Nominal load current AC [IL]	25 A	25 A	25 A		
Combined impulse [U <sub>oc</sub> ]	2 kV	2 kV	4 kV		
Combined impulse [L+N-Gnd] [U <sub>oc</sub> total]	4 kV	4 kV	8 kV		
Voltage protection level [L-N] [VPL]	≤180 V	≤350 V	≤640 V		
Voltage protection level [L/N-Gnd] [VPL]	≤630 V	≤730 V	≤800 V		
SPD according to EN 61643-11		Туре З			
SPD according to IEC 61643-1		Class III			
Response time [L-N] [t <sub>A</sub> ]		≤25ns			
Response time [L/N-Gnd] [t <sub>A</sub> ]	≤100ns				
Operating temperature range [T <sub>u</sub> ]	-40°C to +80°C				
Operating state/fault indication	Green (good) / red (replace)				
Number of ports	1				
Cross-sectional area (min.)	18 AWG solid/stranded				
Cross-sectional area (max.)	10 AWG solid/12 AWG stranded				
For mounting on	3	35mm DIN-Rail per EN 60715			
Enclosure material		Thermoplastic, UL 94V0			
Location category		Indoor			
Degree of protection		IP20			
Capacity		1 Module, DIN 43880			
Agency information*		UL/cUL, CSA, KEMA			
Product warranty		Five years**			
Remote contact signaling					
Remote contact signaling type		Changeover contact			
AC switching capacity (volts/amps)		250 V/0.5 A			
DC switching capacity (volts/amps)	250	V/0.1 A; 125 V/0.2 A; 75 V/0.5	βA		
Conductor ratings and cross-sectional area for remote contact signal terminals	60/75°C Max. 14 AWG solid/stranded				
Ordering information	Orc	ler from catalog numbers abo	ve		

\* Agency information not applicable to DC ratings.
 \*\*See Limited Warranty Statement 3A1502 for details at Eaton.com/bussmannseries.



#### BSPD48RJ45 DIN-Rail RJ45/Ethernet cable SPD

The Bussmann series DIN-Rail mount BSPD48RJ45 Surge Protective Device (SPD) is a UL Listed 497B universal DIN-Rail mount surge protective device for RJ45/Ethernet cable systems. It is easy to install or retrofit Ethernet cable systems with RJ connectors.

The BSPD48RJ45 is installed between the patch panel and the active component (a switch for example). The snap-in mechanism of the supporting foot allows the SPD to be safely grounded via the DIN-Rail. For single applications, the BSPD48RJ45 comes with a supplied mounting bracket with cable lug.



Fulfilling the requirements of Category 6, the BSPD48RJ45 can be universally used for all data services up to nominal voltages of 48 V. It is well suited for existing services such as Gigabit Ethernet, ATM, ISDN, Voice over IP and Power over Ethernet (PoE+ acc. to IEEE 802.3at up to 57 V) and similar applications in structured cabling systems according to Class E up to 250 MHz. Protection of all pairs by means of powerful gas discharge tubes and one adapter filter matrix per pair.

- UL 497B Listed
- · Easy to install or retrofit for protection of all lines
- CAT 6 according to ISO/IEC 11801
- CAT 6 in the channel (Class E)
- Power over Ethernet (PoE+ according to IEEE 802.3at)

#### **DIN-Rail RJ45 SPDs applications**

Catalog no.	BSPD48RJ45	
Bus systems, and measuring and control technology		
Industrial Ethernet	Х	
Data networks		
ATM	Х	
Ethernet 10/100/1000	Х	
FDDI, CDDI	Х	
Industrial Ethernet	Х	
Power over Ethernet (PoE)	Х	
Token Ring	Х	
VG any LAN	Х	
Video systems		
Video (2 wire)	Х	

#### Dimensions — mm



#### **Catalog numbers and specifications**

Catalog no.	BSPD48RJ45	
Nominal voltage (U <sub>N</sub> )	48 V	0
Max. continuous operating DC voltage (U <sub>c</sub> )	48 V	tive
Max. continuous operating AC voltage (U <sub>c</sub> )	34 V	tec <sup>e</sup>
Max. continuous DC voltage pair-pair (PoE) (U <sub>c</sub> )	57 V	vic
Nominal current (I,)	1 A	de
C2 Nominal discharge current (8/20 $\mu$ s) line-line (I <sub>n</sub> )	150 A	Surg
C2 Nominal discharge current (8/20 $\mu$ s) line-PG (I_n)	2.5 kA	
C2 Total nominal discharge current (8/20µs) line-PG (I_)	10 kA	
C2 Nominal discharge current (8/20µs) pair-pair (PoE) (I_)	150 A	
Voltage protection level line-line for In C2 (U <sub>P</sub> )	≤190 V	
Voltage protection level line-PG for In C2 (Up)	≤600 V	
Voltage protection level line-line for In C2 (PoE) (U_{\rm p})	≤600 V	
Voltage protection level line-line at 1 kV/µs C3 $(U_p)$	≤180 V	
Voltage protection level line-PG at 1 kV/µs C3 $(U_p)$	≤500 V	
Voltage protection level pair-pair at 1 kV/ $\mu$ s C3 (PoE) (U <sub>p</sub> )	≤600 V	
Insertion loss at 250MHz	≤3 dB	
Capacitance line-line (C)	≤30pF	
Capacitance line-PG (C)	≤25pF	
Operating temperature range	-40°C to +80°C	
Degree of protection	IP10	
Mounting	35mm DIN-Rail per EN 60715	
Connection (input / output)	RJ45 socket / RJ45 socket	
Pinning	1 / 2, 3 / 6, 4 / 5, 7 / 8	
Grounding	Via 35mm DIN-Rail per EN 60715	
Enclosure material	Die cast zinc	
Color	Bare surface	
Test standards	IEC 61643-21 / EN 61643-21	
Agency information	UL 497B	
Warranty	Five years*	

\* See Limited Warranty Statement 3A1502 for details at Eaton.com/ bussmannseries.

### BSPD\_DING\_ DIN-Rail 4 wire SPDs

The Bussmann series universal fourpole, DIN-Rail mounted surge arrester is UL Listed 497B DIN-Rail mount universal surge protective device. It requires minimum space, while providing effective protection for the stringent requirements of measuring and control circuits, and bus systems.

To ensure safe operation, the arrester provides protection against vibration and shock up to a 30-fold acceleration of gravity. The device's functionoptimized design allows quick and easy protection module removal via "make-before-break" terminals that assure data signal continuity in the protected and unprotected state.



For IEC Applications - Instruction for Surge Protective Device Use In Zone 2 Explosive Atmospheres per ATEX.

- 1. When installed in potentially explosive atmospheres, the Data Signal SPD shall be installed into an enclosure which meets the requirements of a recognized type of protection, in accordance with EN 60079-0.
- 2. The Data Signal DIN SPD as transient suppressor. This approval applies to the following equipment types:
  - BSPD5DINLHF

#### Ambient and temperature class

- -40°C to 80°C, T4: DEKRA 12ATEX0254 X: II 3 G Ex nA IIC T4 Gc
- Standards used for: ATEX: EN60079-0: 2009, EN 60079-15: 2005
- UL 497B Listed
- Function-optimized design for safe use and easy installation
- Four-pole and base mounts on grounded 35mm DIN-Rail
- Module removal without signal interruption via "make-beforebreak" circuitry





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#### DIN-Rail universal 4 wire data signal SPD applications

Universal 4 wire data signal SPD is specified by communication technology.

The table below contains the specific technology to which the BSPD5DINLHF is suited to be used.

System type
Bus systems and measuring, and control technology
CAN-Bus (data line only)
C-Bus (Honeywell)
Device Net (data line only)
FSK
IEC-Bus (RS485)
Interbus INLINE,
LON - TP/XF 78
MODBUS
MPI Bus
Procontic T200 (RS422)
PROFIBUS DP/FMS
PROFIBUS SIMATIC NET
PSM EG RS422 & RS485
Rackbus (RS485)
R Bus
RS 485
RS422, V11
SafetyBUS p
Securilan LON Bus
SUCONET

## The table below contains the specific technology to which the BSPD24DING is suited to be used.

#### System type

Bus systems and measuring, and control technology
0-20mA, 4-20mA signals
Binary signals
TTYy 4-20mA

#### Catalog numbers and specifications

Catalog number	BSPD24DING	BSPD5DINLHF	
Nominal voltage (U <sub>N</sub> )	24 V	5 V	
Nominal current at 45°C (IL)	0.75 A	1.0 A	
VPL line-line for limp D1 (U <sub>n</sub> )	≤102 V	≤25 V	
VPL line-PG for limp D1 (U,)	≤66 V	≤550 V	
VPL line-line at 1 kV/µs C3 (U,)	≤90 V	≤11 V	
VPL line-PG at 1 kV/µs C3 (U,)	≤45 V	≤550 V	
D1 Total lightning impulse current (10/350 μs) (I <sub>imp</sub> )	10 kA	10 kA	
D1 Lightning impulse current (10/350 µs) per line (I <sub>imp</sub> )	2.5 kA	2.5 kA	
C2 Total nominal discharge current (8/20µs) (In)	20 kA	20 kA	
C2 Nominal discharge current (8/20µs) per line (In)	10 kA	10 kA	
Series impedance per line	1.8 Ω	1.0 Ω	
Max. continuous operating DC voltage (U <sub>c</sub> )	33 V	6 V	
Max. continuous operating AC voltage (U <sub>c</sub> )	23.3 V	4.2 V	
Cut-off frequency line-PG (f <sub>g</sub> )	6.8 MHz	100 MHz	
Capacitance line-line (C)	≤0.5 nF	≤25 pF	
Capacitance line-PG (C)	≤1.0 nF	≤16 pF	
ATEX Approvals	†	†	
Agency information	††	††	
IEC 61643-21 test category	D1, C2	, C3	ve
Operating temperature range	-40°C to	+80°C	ecti
Degree of protection	IP20	)	orot
For mounting on	35mm DIN-Rails per EN 60715		ge p de
Grounding	Via base	e part	Sur
Color / enclosure material	Grey / Polyam	ide PA 6.6	
Test standards	IEC 61643-21 / EN 61643-21, UL 497B		
Connection (input / output)	Screw terminal		
Canduatora	Solid: 12-28 AWG (4-0.08 mm <sup>2</sup> )		
	Flexible: 14-28A W0	6 (2.5-0.08 mm <sup>2</sup> )	
Terminal torque	3.5 Lb-In (0.4 N∙m)		
Warranty	5 Years*		

\* See Bussmann series SPD Limited Warranty Statement (3A1502) for details at Eaton.com/bussmannseries.
 † DEKRA 12ATEX0254 X: II 3 G Ex nA IIC T4 Gc.
 ††ATEX, UL, CSA.

# The power of space



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