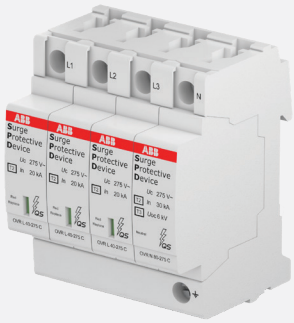
USA PRODUCT CATALOG

Surge protective devices
UL range



- UL range of SPDs
- Type 1 and Type 2 for main electrical distribution equipment and control panel applications
- Hard-wired and DIN rail versions

Surge protective devices (SPDs) are designed to protect against transient surge conditions. Lightning is well accepted as a powerful and destructive element to both physical structures and electrical power and communication systems. However, lightning comprises about 20% of the overall surge activity in a building. The remaining 80% comes from internally generated surge activity.

Professionally installed ABB SPDs provide superior protection and could prevent unnecessary downtime and costly repairs.

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Surge protective devices Introduction

Surge protection devices (SPDs) are designed to protect against transient surge conditions.

Transient surges can reach values of hundreds of thousands of volts or instantaneous current flow of tens of thousands of amperes, but typically last less than 100 microseconds in duration.

Transient surges generated within a facility typically account for 80% of the surge activity.

These internally generated transients can be caused by switching power supplies (computers), electronic ballasts (building lighting) and variable frequency drives (air handlers, elevators, etc).

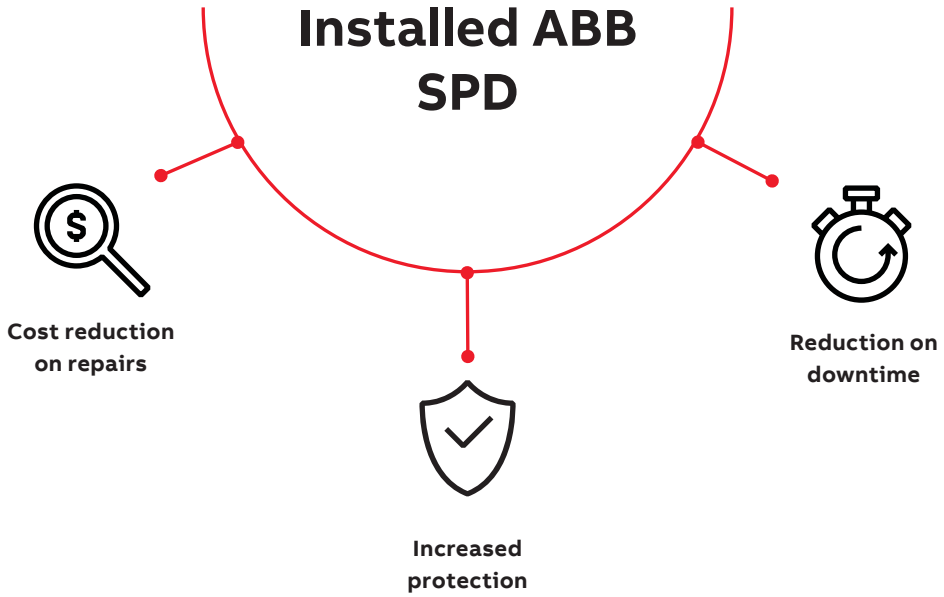
The most destructive transient voltage surges can be attributed to lightning and utility load switching; however, experts predict that these two events account for 20% of all transient surge activity.

Reliable data sources suggest that lightning strikes have current magnitudes in excess of 200,000 amps. Moreover, lightning strikes are not single strike events. Strikes typically consist of four to six “hits” and sometimes can be as high as 40 kA.

Therefore, SPDs must be appropriately sized to provide adequate protection during multiple surge events.

Large transient surge conditions can damage printed circuit board traces and puncture semiconductors, causing immediate or intermittent equipment failures. Continued exposure to surges can degrade printed circuit board traces or semiconductors, resulting in seemingly random delayed equipment failures. Therefore, equipment failures cannot always be contributed to a single power quality event. Surge remnants on data lines can alter digital data and logic levels, causing equipment failures and lockups.

Professionally installed ABB products provide superior protection against transient surges, helping to prevent unnecessary downtime and costly repairs.



Surge protective devices
UL and IEC terminology

ABB SPDs are certified according to UL 1449 4th Edition and use different terminology than IEC certified units. The purpose is the same for both standards, but it is important to differentiate the terminology and the type of SPD.

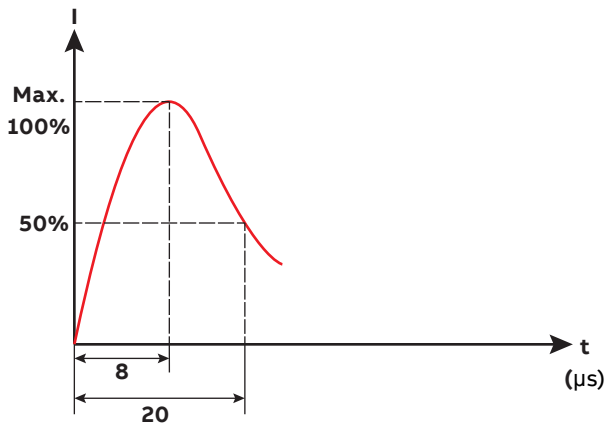
IEC 61643-11 terminology	Equivalent UL 1449 terminology	Description
I_{imp}	No equivalent	The maximum surge current rating for an SPD when subjected to a 10 x 350 µs wave shape.
I_{max}	Single surge current rating	The maximum surge current rating for an SPD when subjected to an 8 x 20 µs wave shape.
I_n	I_N	Nominal surge discharge current for 8 x 20 µs wave shape.
I_{SCCR}	SCCR	Short-circuit current rating (withstand).
U_P	VPR	Voltage protection level or let-through voltage level of the SPD when subjected to a test surge.
U_C	MCOV	Maximum continuous operational voltage the SPD can be exposed to without failure.
U_N	Operational voltage	Nominal operational voltage or application voltage.

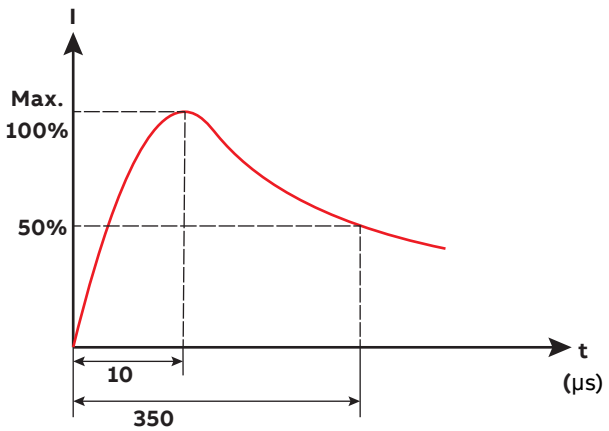
8 x 20 µs wave shape

- Used for IEC Class II test (EN Type 2)
- I_{max} is the surge current value designation for IEC
- I_n is also tested using this wave shape
- UL single surge current rating

10 x 350 µs wave shape (IEC only)

- Used in IEC 61643-11 / Class I tested SPD or EN 61643-11 Type 1
- SPD must survive 5 impulses increasing in magnitude to max I_{imp}
- I_{imp} is then the surge current value designation if SPD passes
- No equivalent test in UL standards





Surge protective devices
UL Type 1 SPDs

—
01
OVRHSP series
Type 1 SPD

—
01

UL Type 1 SPD (line side)

Type 1 SPDs are permanently connected devices that can be installed anywhere between the secondary of the utility service transformer and the main distribution disconnect.

A Type 1 SPD can also be installed anywhere on the load side of the main distribution and can be installed without the need for external over-current protection (does not require an upstream fuse or breaker).

Surge protection devices
Typical SPD applications

Wastewater
Wastewater treatment facilities are using additional technologies to monitor and ensure clean water efficiently.

Surge protection devices are necessary to provide confidence and reliability in today's personnel-restricted environments.

Renewable energy
Today's technologies are rapidly developing innovative ways to harvest electricity.

Surge protection devices provide protection against lighting and power quality anomalies caused by switching on the grid.

Healthcare
Almost every piece of modern medical equipment depends on electrical power.

The more sophisticated the technology, the more susceptible it is to the devastating effects of transient surge events.

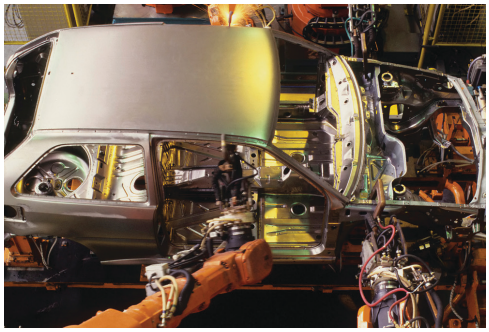
Education
Most school systems use state-of-the-art multimedia outlets, which result in more computers in the classrooms.

Surge protection devices help to ensure these computers stay up and running, keeping growing minds energized.

Surge protection devices
Typical SPD applications

Commercial / retail
Companies are now installing efficient ballasts, dimmers and integrated renewable energy systems.

Surge protection devices help protect these new technologies, which are more susceptible to power quality events.



Manufacturing / industrial
Improvements to manufacturing devices have migrated manufacturers to human machine combinations to maximize the manufacturing output capacities of facilities.

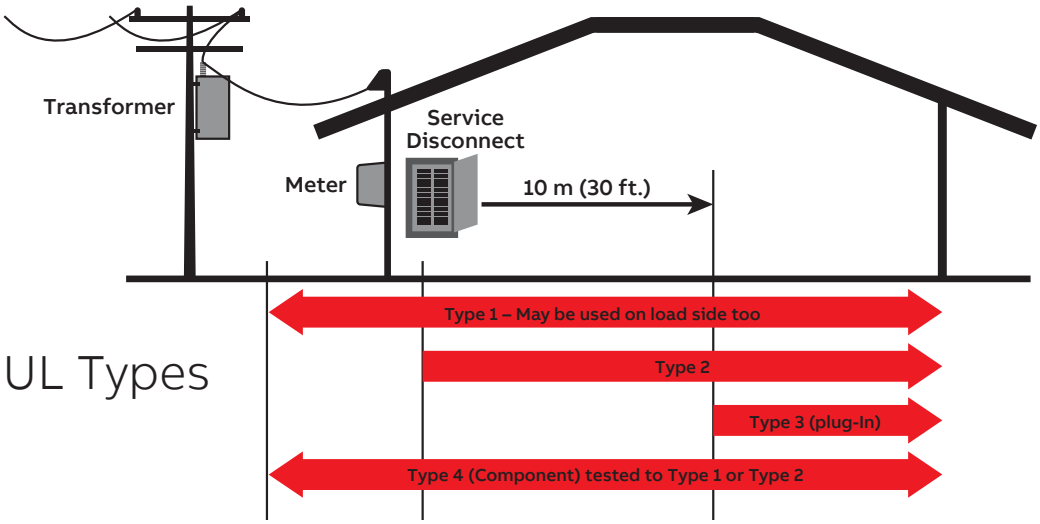
Surge protection devices protect this equipment from damage caused by large variations in the current and voltage, thus helping to optimize uptime in manufacturing production.

Information / data management
Data centers typically require an enormous amount of power equipment from transfer switches to multiple remote power panels providing power to processing equipment.

Surge protection devices can help to protect this equipment from costly downtime.

Transportation
Air traffic controls, radar systems, weather stations, electronic highway signs and outside security cameras are among a handful of the critical loads that require protection from the devastating effects of transient surge events.

Surge protection devices
Typical locations for SPDs



UL Types

SPD location	Recommended SPD		Protected equipment examples	
Service entrance/main distribution (1,000 amps and higher)				
The point of entry for utility power. A unit installed here protects the facility from a large external event, such as lightning or grid switching.	OVRHSP 400 OVRHSP 300 OVRHSP 240 OVRHSP 200		• Electrical switchgear • Switchboard • Distribution • Motor control centers	• Emergency power backup • Transfer switch • UPS system
Sub-distribution	**Mid-level distribution (1,000 – 400 amps)**	**Panelboard (400 – 100 amps)**		
Closer to the critical load. A unit installed here protects from internally generated surges and isolates critical equipment from faults.	OVRHSP 120...240 OVRHSR 120...160 OVRHTE 80...100	OVRHSP 60...160 OVRHSR 120...160 OVRHTE 50...100 OVRHT3B OVRHT3C OVRHS3U	• Emergency power backup • Transfer switches • Control boxes • Switchgear • Generators • Computer servers • Telephone systems • Fax machines	• Building management systems • Surveillance equipment • Security systems • HVAC • Fire alarm panels • Copiers
Equipment-level protection (100 amps and below)				
Installing surge protection at panel distribution extends unit longevity by absorbing mini surges that reduce equipment life.	OVRHSP 60...80 OVRHTE 25...50 OVRHT3B OVRHT3C OVRHS3U OVRHLD 20...30		• X-ray • CAT-scan • Life support equipment • Medical instrumentation • Computer servers • Elevators	• Parking lot lighting • Printers • Communication systems • Motors • Pumps • Drives

Type 1: OVRH Series (hard-wired SPDs)

OVRH series
Product range overview

Name	OVRHTP (60, 120, 160, 200, 400)	OVRHSP (200, 240, 300, 400)	OVRHSP (120, 160)	OVRHSP (60, 80, 100)	OVRHSR (120, 160)	OVRHTE	OVRHT3B	OVRHT3C	OVRHS3U	OVRHLD
Connection ampacity	4000 and below	1,000 A and higher	1,000 A and below	400 A and below	1,000 A and below	100–80 kA 1,000 A and below 50 kA 400 A and below 25 kA 100 A and below	400 A and below	400 A and below	400 A and below	100 A and below
SPD type	Type 1 and Type 2	Type 1	Type 1	Type 1	Type 1	Type 2	Type 1	Type 1	Type 1 and Type 2	Type 1
Certifications	UL 1449	UL 1449	UL 1449	UL 1449	UL 1449	UL 1449	UL 1449	UL 1449	UL 1449	UL 1449
Surge ratings	60, 80, 100, 120, 160, 200, 240, 300, 400 kA per phase	200, 240, 300, 400 kA per phase	120, 160 kA per phase	60, 80, 100 kA per phase	120, 160 kA per phase	25, 50, 80 and 100 per mode	50 kA per phase	50 kA per phase	40 kA per phase	20, 25, 30 kA per phase
LEDs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dry relay contacts	Standard	Standard	Standard	Optional	Standard	Optional	Not available	Not available	Optional	Not available
EMI filter	Optional	Optional	Optional	Optional	Optional	Optional	Not available	Not available	Not available	Not available
Surge counter	Optional	Optional	Optional	Not available	Not available	Not available	Not available	Not available	Not available	Not available
Warranty	10 years	10 years	10 years	10 years	10 years	5 years	3 years	3 years	1 year	1 year

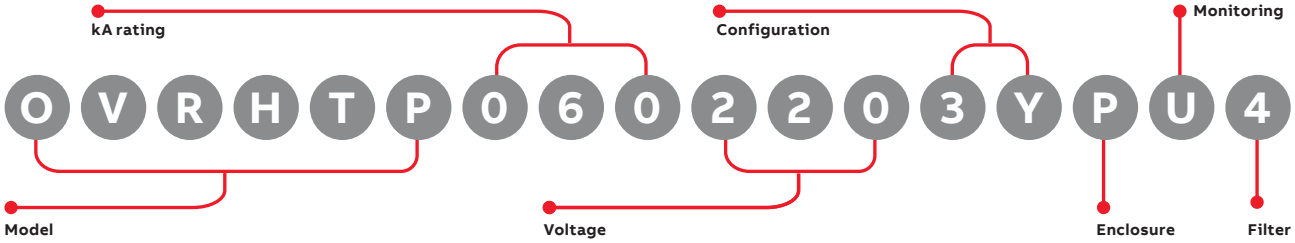
OVRHTP series

OVRHTP (4,000 A and below, 60 to 100 kA)

Product features

- UL Listed 1449 4th edition for Type 1 and Type 2
- SPD applications
- Thermally protected MOVs provide superior protection and continuous operation
- 200 kAIC short circuit current rating allows direct bus connection without the need for an upstream over-current protection device
- UL 1283 EMI/RF filter available as an option
- Compact and lightweight design
- 10-year standard warranty

c UL US LISTED RoHS Compliant



kA rating	Suffix
60 kA per phase, 30 kA per mode	060
80 kA per phase, 40 kA per mode	080
100 kA per phase, 50 kA per mode	100

Enclosure option	Suffix
Fiberglass-reinforced polyester, NEMA 4X	P
Powder-coated metal NEMA 4	M
Stainless steel NEMA 4X	S

Voltage and configuration (must choose one)	Suffix
120 V, 1-phase, 2-wire + ground	1201P
127 V, 1-phase, 2-wire + ground	1271P
220 V, 1-phase, 2-wire + ground	2201P
230 V, 1-phase, 2-wire + ground	2301P
240 V, 1-phase, 2-wire + ground	2401P
277 V, 1-phase, 2-wire + ground	2771P
240/120 V, 2-phase, 3-wire + ground	1202S
480/240 V, 2-phase, 3-wire + ground	2402S
240Δ /120 V, 3-phase high-leg , 4-wire + ground	1203H
208Y/120 V, 3-phase Wye, 4-wire + ground	1203Y
380Y/220 V, 3-phase Wye, 4-wire + ground	2203Y
400Y/230 V, 3-phase Wye, 4-wire + ground	2303Y
415Y/240 V, 3-phase Wye, 4-wire + ground	2403Y
480Y/277 V, 3-phase Wye, 4-wire + ground	2773Y
600Y/347 V, 3-phase Wye, 4-wire + ground	3473Y
208 V, 3-phase Delta, 3-wire + ground	2083D
240 V, 3-phase Delta, 3-wire + ground	2403D
415 V, 3-phase Delta, 3-wire + ground	4153D
480 V, 3-phase Delta, 3-wire + ground	4803D
600 V, 3-phase Delta, 3-wire + ground	6003D

Monitoring option (must choose one)	Suffix
Status indicator LED lights (one per phase)	B
Status indicator LED lights (one per phase), dry relay contacts, audible alarm with silence button, fault light	U

Filter option	Suffix
4 UF filter	4
UL 1283 filter making device a Type 2	T2
No filter	0

Product specifications

Electrical	
Maximum surge current rating	XX kA per phase, XX kA per mode
Nominal discharge current rating (L-N)	10 kA
Operating frequency	47–63 Hz
Connection method	Pre-wired with 36 inches of #10 AWG conductor
Modes of protection	All modes (L-N, L-G, N-G, L-L)
Fault rating (SCCR)	200 kAIC — no upstream over-current protection device (breaker or fuse) required
Application	ANSI/IEEE C62.41.1 locations A, B and C ideal for distribution panels, branch panels and critical loads

Mechanical		
Installation location		Indoor or outdoor
Mounting method		Dual mounting flanges
Operating environment	-40 °F to 149 °F (-40 °C to +65 °C)	5%–95% non-condensing humidity
Altitude		0–12,000 ft (3.66 km)
Product design		Individual thermally fused MOV technology

EMI/RFI filter attenuation	
Mil Standard 220B	Up to 40 dB from 10 kHz to 100 MHz

Regulatory	
cULus 1449 4th Edition	VZCA: E316636 Type 1
UL 1283 with filter option	Yes
UL96A compliant	Yes
IEEE C62.41.2, C62.45	Yes
NFPA 70 (NEC), Article 285	Yes
RoHs compliant	Yes
Listed by	UL

Warranty	**10 years**

OVRHTP series

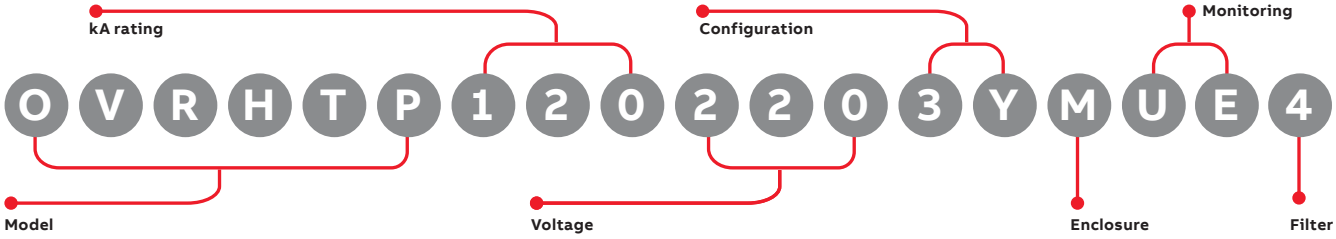
OVRHTP (4,000 A and below, 120 to 200 kA)

Product features

- UL Listed 1449 4th edition for Type 1 and Type 2
- SPD applications
- Thermally protected MOVs provide superior protection and continuous operation
- 200 kAIC short circuit current rating allows direct bus connection without the need for an upstream over-current protection device
- UL 1283 EMI/RF filter available as an option
- Compact and lightweight design
- 10-year standard warranty

c UL US LISTED

RoHS Compliant



kA rating	Suffix
120 kA per phase, 60 kA per mode	120
160 kA per phase, 80 kA per mode	160
200 kA per phase, 100 kA per mode	200

Voltage and configuration (must choose one)	Suffix
120 V, 1-phase, 2-wire + ground	1201P
127 V, 1-phase, 2-wire + ground	1271P
220 V, 1-phase, 2-wire + ground	2201P
230 V, 1-phase, 2-wire + ground	2301P
240 V, 1-phase, 2-wire + ground	2401P
277 V, 1-phase, 2-wire + ground	2771P
240/120 V, 2-phase, 3-wire + ground	1202S
480/240 V, 2-phase, 3-wire + ground	2402S
240Δ /120 V, 3-phase high-leg , 4-wire + ground	1203H
208Y/120 V, 3-phase Wye, 4-wire + ground	1203Y
380Y/220 V, 3-phase Wye, 4-wire + ground	2203Y
400Y/230 V, 3-phase Wye, 4-wire + ground	2303Y
415Y/240 V, 3-phase Wye, 4-wire + ground	2403Y
480Y/277 V, 3-phase Wye, 4-wire + ground	2773Y
600Y/347 V, 3-phase Wye, 4-wire + ground	3473Y
208 V, 3-phase Delta, 3-wire + ground	2083D
240 V, 3-phase Delta, 3-wire + ground	2403D
415 V, 3-phase Delta, 3-wire + ground	4153D
480 V, 3-phase Delta, 3-wire + ground	4803D
600 V, 3-phase Delta, 3-wire + ground	6003D

Enclosure option	Suffix
Fiberglass-reinforced polyester, NEMA 4X	P
Powder-coated metal NEMA 4	M
Stainless steel NEMA 4X	S
Fiberglass-reinforced polyester with termination lugs	PL
Powder-coated metal NEMA 4 with termination lugs	ML
Stainless steel NEMA 4X with termination lug	SL

Monitoring option (must choose one)	Suffix
Status indicator LED lights (one per phase)	B
Status indicator LED lights (one per phase), dry relay contacts, audible alarm with silence button, fault light	U
Status indicator LED lights (one per phase), surge counter, dry relay contacts, audible alarm with silence button, fault light	UE

Filter option	Suffix
4 UF filter	4
UL 1283 filter making device a Type 2	T2
No filter	0

Product specifications

Electrical	
Maximum surge current rating	XX kA per phase, XX kA per mode
Nominal discharge current rating (L-N)	20 kA
Operating frequency	47–63 Hz
Connection method	Pre-wired with 36 inches of #6 AWG conductor (P, M or S enclosure suffix) or termination lugs for #10–#4 AWG conductor (PL, ML or SL enclosure suffix)
Modes of protection	All modes (L-N, L-G, N-G, L-L)
Fault rating (SCCR)	200 kAIC — no upstream over-current protection device (breaker or fuse) required
Application	ANSI/IEEE C62.41.1 locations A, B and C ideal for distribution panels, branch panels and critical loads

Mechanical		
Installation location		Indoor or outdoor
Mounting method		Dual mounting flanges
Operating environment	-40 °F to 149 °F (-40 °C to +65 °C)	5%–95% non-condensing humidity
Altitude		0–12,000 ft (3.66 km)
Product design		Individual thermally fused MOV technology

EMI/RFI filter attenuation	
Mil Standard 220B	Up to 40 dB from 10 kHz to 100 MHz

Regulatory	
cULus 1449 4th Edition	VZCA: E316636 Type 1
UL 1283 with filter option	Yes
UL96A compliant	Yes
IEEE C62.41.2, C62.45	Yes
NFPA 70 (NEC), Article 285	Yes
RoHs compliant	Yes
Listed by	UL

Warranty	**10 years**

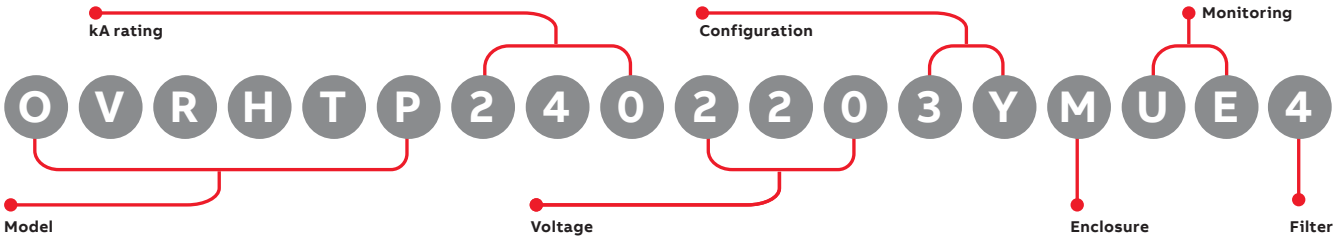
OVRHTP series

OVRHTP (4,000 A and below, 240 to 400 kA)

Product features

- UL Listed 1449 4th edition for Type 1 and Type 2
- SPD applications
- Thermally protected MOVs provide superior protection and continuous operation
- 200 kAIC short circuit current rating allows direct bus connection without the need for an upstream over-current protection device
- UL 1283 EMI/RF filter available as an option
- Compact and lightweight design
- 10-year standard warranty

c UL US LISTED RoHS Compliant



kA rating	Suffix
240 kA per phase, 120 kA per mode	240
300 kA per phase, 150 kA per mode	300
400 kA per phase, 200 kA per mode	400

Enclosure option	Suffix
Fiberglass-reinforced polyester with termination lugs	PL
Powder-coated metal NEMA 4 with termination lugs	ML
Stainless steel NEMA 4X with termination lug	SL

Voltage and configuration (must choose one)	Suffix
120 V, 1-phase, 2-wire + ground	1201P
127 V, 1-phase, 2-wire + ground	1271P
220 V, 1-phase, 2-wire + ground	2201P
230 V, 1-phase, 2-wire + ground	2301P
240 V, 1-phase, 2-wire + ground	2401P
277 V, 1-phase, 2-wire + ground	2771P
240/120 V, 2-phase, 3-wire + ground	1202S
480/240 V, 2-phase, 3-wire + ground	2402S
240Δ /120 V, 3-phase high-leg , 4-wire + ground	1203H
208Y/120 V, 3-phase Wye, 4-wire + ground	1203Y
380Y/220 V, 3-phase Wye, 4-wire + ground	2203Y
400Y/230 V, 3-phase Wye, 4-wire + ground	2303Y
415Y/240 V, 3-phase Wye, 4-wire + ground	2403Y
480Y/277 V, 3-phase Wye, 4-wire + ground	2773Y
600Y/347 V, 3-phase Wye, 4-wire + ground	3473Y
208 V, 3-phase Delta, 3-wire + ground	2083D
240 V, 3-phase Delta, 3-wire + ground	2403D
415 V, 3-phase Delta, 3-wire + ground	4153D
480 V, 3-phase Delta, 3-wire + ground	4803D
600 V, 3-phase Delta, 3-wire + ground	6003D

Monitoring option (must choose one)	Suffix
Status indicator LED lights (one per phase)	B
Status indicator LED lights (one per phase), dry relay contacts, audible alarm with silence button, fault light	U
Status indicator LED lights (one per phase), surge counter, dry relay contacts, audible alarm with silence button, fault light	UE

Filter option	Suffix
4 UF filter	4
UL 1283 filter making device a Type 2	T2
No filter	0

Product specifications

Electrical	
Maximum surge current rating	XX kA per phase, XX kA per mode
Nominal discharge current rating (L-N)	20 kA
Operating frequency	47–63 Hz
Connection method	Termination lugs for #10–#4 AWG conductor (PL, ML or SL enclosure suffix)
Modes of protection	All modes (L-N, L-G, N-G, L-L)
Fault rating (SCCR)	200 kAIC — no upstream over-current protection device (breaker or fuse) required
Application	ANSI/IEEE C62.41.1 locations A, B and C ideal for distribution panels, branch panels and critical loads

Mechanical		
Installation location		Indoor or outdoor
Mounting method		Dual mounting flanges
Operating environment	-40 °F to 149 °F (-40 °C to +65 °C)	5%–95% non-condensing humidity
Altitude		0–12,000 ft (3.66 km)
Product design		Individual thermally fused MOV technology

EMI/RFI filter attenuation	
Mil Standard 220B	Up to 40 dB from 10 kHz to 100 MHz

Regulatory	
cULus 1449 4th Edition	VZCA: E316636 Type 1
UL 1283 with filter option	Yes
UL96A compliant	Yes
IEEE C62.41.2, C62.45	Yes
NFPA 70 (NEC), Article 285	Yes
RoHs compliant	Yes
Listed by	UL

Warranty	**10 years**

OVRH series

OVRHSP (4,000 A and below, 60 to 100 kA)

Product features

- Listed by ETL to UL 1449 4th Edition for Type 1 and Type 2 SPD applications
- Fail-safe design with individually fused metal oxide varistors (MOVs) eliminating single-point failure, protecting against both over-current and over-voltage events
- 200 kAIC short circuit rating permits direct bus connection to most electrical services
- Low let-through voltage ensured by the lowest possible impedance path to ground and equal current sharing during surge events
- All weather-sealed, powder-coated NEMA 4/IP65 housing is designed for any orientation and indoor/outdoor applications
- 10-year standard warranty

RoHS Compliant

Intertek

Voltage	Network type	Part number
120 V AC	1PH, 2W + GND	OVRHSPxx1201P
240 V AC		OVRHSPxx2401P
240/120 V AC	2PH, 3W + GND	OVRHSPxx1202S
208/120 V AC	3PH, 4W + GND (Wye)	OVRHSPxx1203Y
380/220 V AC		OVRHSPxx2203Y
415/240 V AC		OVRHSPxx2403Y
480/277 V AC		OVRHSPxx2773Y
240/120 V AC	3PH, 4W + GND (High-leg)	OVRHSPxx1203H
240 V AC	3PH, 3W + GND (Delta)	OVRHSPxx2403D

Where "xxx" can be 60 kA, 80 kA, 100 kA

Available options Add applicable suffix to the end of the model number	Suffix
Advanced monitoring *	1
Transient filter (meets UL1283) **	3
Stainless steel enclosure (SS)	4
Advanced monitoring + SS enclosure	A
Transient filter + SS enclosure	C

* Includes dry relay contacts, audible alarm, alarm silence button and fault light

** Not recommended when using telecom rectifiers

Electrical characteristics	
Maximum surge current rating	xx per phase / half xx per mode
Nominal discharge current rating (L-N)	10 kA
Operating frequency	47–63 Hz
Connection method	Parallel to electrical distribution system
Modes of protection	All modes (L-N, L-G, N-G, L-L)
Fault rating (SCCR)	200 kAIC — no upstream over-current protection device required (breaker or fuse)
Response time	Less than 1 nanosecond
Standard monitoring	LED status indicator lights (1 per phase)
EMI / RFI filter attenuation	
Maximum attenuation frequency	41 dB at 106 kHz
Mechanical characteristics	
Weight	10 lbs. (4.5 kg)
Enclosure type	Powder-coated, impact-resistant steel, weather-proof NEMA 4
Installation location	Indoor / outdoor
Mounting method	Dual mounting flanges
Operating temperature	-40 °to 185 °F (-40 °to 70 °C)
Altitude	13,000 ft. (up to 4000 m)
Product design	Parallel design with individually fused MOVs
Regulations and certifications	
UL 1449 4th edition	Type 1
UL 1283	Yes
IEEE C62.41.1, .2, C62.45	Yes
Listed by	ETL

OVRH series

OVRHSP (4,000 A and below, 120 to 160 kA)

Product features

- Listed by UL 1449 4th Edition for Type 1 and Type 2 SPD applications
- Fail-safe design with individually fused metal oxide varistors (MOVs) eliminating single-point failure, protecting against both over-current and over-voltage events
- 200 kAIC short circuit rating permits direct bus connection to most electrical services
- Low let-through voltage ensured by the lowest possible impedance path to ground and equal current sharing during surge events
- All weather-sealed, powder-coated NEMA 4/IP65 housing is designed for any orientation and indoor/outdoor applications
- 10-year standard warranty

c UL US LISTED RoHS Compliant

Voltage	Network type	Part number
120 V AC	1PH, 2W + GND	OVRHSPxx1201P
240 V AC		OVRHSPxx2401P
240/120 V AC	2PH, 3W + GND	OVRHSPxx1202S
208/120 V AC	3PH, 4W + GND (Wye)	OVRHSPxx1203Y
380/220 V AC		OVRHSPxx2203Y
415/240 V AC		OVRHSPxx2403Y
480/277 V AC		OVRHSPxx2773Y
600/347 V AC		OVRHSPxx3473Y
240/120 V AC	3PH, 4W + GND (High-leg)	OVRHSPxx1203H
240 V AC	3PH, 3W + GND (Delta)	OVRHSPxx2403D
380 V AC		OVRHSPxx3803D
480 V AC		OVRHSPxx4803D
600 V AC		OVRHSPxx6003D

Where "xxx" can be 120 kA, 160 kA

Available options Add applicable suffix to the end of the part number	**Suffix**
Surge counter	2
Transient filter (meets UL1283) *	3
Stainless steel enclosure (SS)	4
Transient filter + surge counter	B
Transient filter + SS enclosure	C
Surge counter + SS enclosure	D
Filter + counter + SS enclosure	T

* Not recommended when using telecom rectifiers

Electrical characteristics	
Maximum surge current rating	xx per phase / half xx per mode
Nominal discharge current rating (L-N)	20 kA
Operating frequency	47–63 Hz
Connection method	Parallel to electrical distribution
Modes of protection	All modes (L-N, L-G, N-G, L-L)
Fault rating (SCCR)	200 kAIC — no upstream over-current protection device required (breaker or fuse)
Response time	Less than 1 nanosecond
Standard monitoring	LED status indicator lights (1 per phase), dry contacts, alarm
EMI / RFI filter attenuation	
Maximum attenuation frequency	41 dB at 106 kHz
Mechanical characteristics	
Weight	20 lbs. (9 kg)
Enclosure type	Powder-coated, impact-resistant steel, weather-proof NEMA 4
Installation location	Indoor / outdoor
Mounting method	Dual mounting flanges
Operating temperature	-40 °to 185 °F (-40 °to 70 °C)
Altitude	13,000 ft. (up to 4000 m)
Product design	Parallel design with individually fused MOVs
Regulations and certifications	
UL 1449 4th edition	Type 1
UL 1283	Yes
IEEE C62.41.1, .2, C62.45	Yes
Listed by	UL

OVRH series

OVRHSP (4,000 A and below, 200 to 400 kA)

Product features

- Listed by UL 1449 4th Edition for Type 1 and Type 2 SPD applications
- Fail-safe design with individually fused metal oxide varistors (MOVs) eliminating single-point failure, protecting against both over-current and over-voltage events
- 200 kAIC short circuit rating permits direct bus connection to most electrical services
- Low let-through voltage ensured by the lowest possible impedance path to ground and equal current sharing during surge events
- All weather-sealed, powder-coated NEMA 4/IP65 housing is designed for any orientation and indoor/outdoor applications
- 10-year standard warranty

c UL us LISTED RoHS Compliant

Voltage	Network type	Part number
120 V AC	1PH, 2W + GND	OVRHSPxx1201P
240 V AC		OVRHSPxx2401P
240/120 V AC	2PH, 3W + GND	OVRHSPxx1202S
208/120 V AC	3PH, 4W + GND (Wye)	OVRHSPxx1203Y
380/220 V AC		OVRHSPxx2203Y
415/240 V AC		OVRHSPxx2403Y
480/277 V AC		OVRHSPxx2773Y
600/347 V AC		OVRHSPxx3473Y
240/120 V AC	3PH, 4W + GND (High-leg)	OVRHSPxx1203H
240 V AC	3PH, 3W + GND (Delta)	OVRHSPxx2403D
380 V AC		OVRHSPxx3803D
480 V AC		OVRHSPxx4803D
600 V AC		OVRHSPxx6003D

Where "xxx" can be 200 kA, 240 kA, 300 kA, 400 kA

Available options Add applicable suffix to the end of the part number	Suffix
Surge counter	2
Transient filter (meets UL1283) *	3
Stainless steel enclosure (SS)	4
Transient filter + surge counter	B
Transient filter + SS enclosure	C
Surge counter + SS enclosure	D
Filter + counter + SS enclosure	T

* Not recommended when using telecom rectifiers

Electrical characteristics	
Maximum surge current rating	xx per phase / half xx per mode
Nominal discharge current rating (L-N)	20 kA
Operating frequency	47–63 Hz
Connection method	Parallel to electrical distribution
Modes of protection	All modes (L-N, L-G, N-G, L-L)
Fault rating (SCCR)	200 kAIC — No upstream protection required (breaker / fuse)
Response time	Less than 1 nanosecond
Standard monitoring	LED status indicator lights (1 per phase), dry contacts, alarm
EMI / RFI filter attenuation	
Maximum attenuation frequency	41 dB at 106 kHz
Mechanical characteristics	
Weight	40 lbs. (18 kg)
Enclosure type	Powder-coated, impact-resistant steel, weather-proof NEMA 4
Installation location	Indoor / outdoor
Mounting method	Dual mounting flanges
Operating temperature	-40 °to 185 °F (-40 °to 70 °C)
Altitude	13,000 ft. (up to 4000 m)
Product design	Parallel design with individually fused MOVs
Regulations and certifications	
UL 1449 4th edition	Type 1
UL 1283	Yes
IEEE C62.41.1, .2, C62.45	Yes
Listed by	UL

OVRH series

OVRHTE (1,000 A and below, 25 to 100 kA)

Product features

- Listed by UL 1449 4th Edition for Type 2 SPD applications
- Protects facilities and equipment against the harmful effects of lightning strikes and internally generated electrical transients
- Includes pre-wired pigtail conductors to streamline installation
- Features internal copper bus conduction path to minimize system impedances, lowering clamping voltage and increasing protection
- Pre-wired with 24" (609.6 mm) cables #10 AWG (5 mm²)
- 5-year standard warranty

c UL US LISTED RoHS Compliant

Voltage	Network type	Part number
120 V AC	1PH, 2W + GND	OVRHTExx1201P
240 V AC		OVRHTExx2401P
240/120 V AC	2PH, 3W + GND	OVRHTExx1202S
208/120 V AC	3PH, 4W + GND (Wye)	OVRHTExx1203Y
380/220 V AC		OVRHTExx2203Y
415/240 V AC		OVRHTExx2403Y
480/277 V AC		OVRHTExx2773Y
600/347 V AC		OVRHTExx3473Y
240/120 V AC	3PH, 4W + GND (High-leg)	OVRHTExx2403H
240 V AC	3PH, 3W + GND (Delta)	OVRHTExx2403D
380 V AC		OVRHTExx3803D
480 V AC		OVRHTExx4803D

Where "xxx" can be 25 kA, 50 kA, 80 kA or 100 kA

Available option Add applicable suffix to the end of the part number	Suffix
Dry Form "C" relay contact*	5

* Add applicable suffix to the end of the part number.

Example: OVRHTE251201P5

Electrical characteristics	
Maximum surge current rating	xx per phase / half xx per mode
Nominal discharge current rating (L-N)	20 kA
Operating frequency	47–63 Hz
Connection method	Parallel to load (with breaker)
Modes of protection	All modes (L-N, L-G, N-G, L-L)
Fault rating (SCCR)	65 kAIC — upstream protection (breaker or fuse required)
Response time	Less than 1 nanosecond
Standard monitoring	LED status indicator lights (1 per phase)
EMI / RFI filter attenuation	
Maximum attenuation frequency	50 dB at 100 kHz
Mechanical characteristics	
Weight	12.7 lbs. (5.8 kg)
Enclosure type	NEMA 4X fiberglass-reinforced polyester (FRP) surface-mount, non-removable cover
Installation location	Indoor / outdoor
Mounting method	Dual mounting flanges
Operating temperature	-40 °to 140 °F (-40 °to 60 °C)
Altitude	16,400 ft. (up to 5000 m)
Product design	No internal fusing
Regulations and certifications	
UL 1449 4th edition	Type 2
UL 1283	Yes
IEEE C62.41.1, .2, C62.45	Yes
Listed by	UL

OVRH series

OVRHT3B (400 A and below, 50 kA)

Product features

- Listed to UL1449 4th Edition for Type 1 SPD applications
- 50 kA protection per phase
- Individual thermally fused and protected MOVs
- LED indication
- Pre-wired conductors included
- Multiple MOVs per phase eliminate single-point failure
- 3-year standard warranty.

c UL us LISTED RoHS Compliant

Voltage	Network Type 1 SPD	Part number
120 V AC	1PH, 2W + GND	OVRHT3B501201P
240 V AC		OVRHT3B502401P
277 V AC		OVRHT3B502771P
480 V AC		OVRHT3B504801P
240/120 V AC	2PH, 3W + GND	OVRHT3B501202S
480/240 V AC		OVRHT3B502402S
240/120 V AC	3PH, 4W + GND (Hi-Leg)	OVRHT3B502403H
208/120 V AC	3PH, 4W + GND (Wye)	OVRHT3B501203Y
380/220 V AC		OVRHT3B502203Y
400/230 V AC		OVRHT3B502303Y
415/240 V AC		OVRHT3B502403Y
480/277 V AC		OVRHT3B502773Y
600/347 V AC		OVRHT3B503473Y
240 V AC	3PH, 3W + GND (Delta)	OVRHT3B502403D
380 V AC		OVRHT3B503803D
400 V AC		OVRHT3B504003D
480 V AC		OVRHT3B504803D
600 V AC		OVRHT3B506003D

Electrical characteristics	
Nominal discharge current rating (L-N)	10 kA
Operating frequency	47–63 Hz
Connection method	Parallel to load (with breaker)
Modes of protection	Model dependent
Fault rating (SCCR)	100 kAIC
Response time	Less than 1 nanosecond
Standard monitoring	LED status indicator lights
Mechanical characteristics	
Weight	0.5 lbs. (0.23 kg)
Enclosure type	NEMA 4X non-metallic
Installation location	Indoor / outdoor
Mounting method	½" (12.7 mm) - 14 NPT thread
Operating temperature	-31 °to 176 °F (-35 °to 80 °C)
Altitude	16,400 ft. (up to 5000 m)
Product design	Individual thermally fused MOVs
Regulations and certifications	
UL 1449 4th edition	Type 1
UL 96A	Yes
IEEE C62.41.1, .2, C62.45	Yes
Listed by	UL

OVRH series

OVRHT3C (400 A and below, 50 kA)

Product features

- Listed to UL1449 4th Edition for Type 1 SPD applications
- 50 kA protection per phase
- Individual thermally fused and protected MOVs
- LED indication
- Pre-wired conductors included
- Multiple MOVs per phase eliminate single-point failure
- 3-year standard warranty

c UL us LISTED RoHS Compliant

Voltage	Network Type 1 SPD	Part number
120 V AC	1PH, 2W + GND	OVRHT3C501201P
240 V AC		OVRHT3C502401P
277 V AC		OVRHT3C502771P
480 V AC		OVRHT3C504801P
240/120 V AC	2PH, 3W + GND	OVRHT3C501202S
480/240 V AC		OVRHT3C502402S
240/120 V AC	3PH, 4W + GND (Hi-Leg)	OVRHT3C502403H
208/120 V AC	3PH, 4W + GND (Wye)	OVRHT3C501203Y
380/220 V AC		OVRHT3C502203Y
400/230 V AC		OVRHT3C502303Y
415/240 V AC		OVRHT3C502403Y
480/277 V AC		OVRHT3C502773Y
600/347 V AC		OVRHT3C503473Y
240 V AC	3PH, 3W + GND (Delta)	OVRHT3C502403D
380 V AC		OVRHT3C503803D
400 V AC		OVRHT3C504003D
480 V AC		OVRHT3C504803D
600 V AC		OVRHT3C506003D

Electrical characteristics	
Nominal discharge current rating (L-N)	10 kA
Operating frequency	47–63 Hz
Connection method	Parallel to load (with breaker)
Modes of protection	Model dependent
Fault rating (SCCR)	100 kAIC
Response time	Less than 1 nanosecond
Standard monitoring	LED status indicator lights
Mechanical characteristics	
Weight	0.5 lbs. (0.23 kg)
Enclosure type	NEMA 4X non-metallic
Installation location	Indoor / outdoor
Mounting method	½" 12.7 mm) - 14 NPT thread
Operating temperature	-31 °to 176 °F (-35 °to 80 °C)
Altitude	16,400 ft. (up to 5000 m)
Product design	Individual thermally fused MOVs
Regulations and certifications	
UL 1449 4th edition	Type 1
UL 96A	Yes
IEEE C62.41.1, .2, C62.45	Yes
Listed by	UL

OVRH series

OVRHS3U (400 A and below, 40 kA)

Product features

- Listed to UL1449 4th Edition for Type 1 or Type 2 SPD applications
- Individual fusing for each metal oxide varistor (MOV)
- LED indicating proper functioning of L-N and N-G MOVs
- Pre-wired with 18" (450 mm) cables #14 AWG (2 mm²)
- 1-year standard warranty

c UL us LISTED

RoHS Compliant

Voltage	Network Type 1 SPD	Part number
120 V AC	1PH, 2W + GND	OVRHS3U401201P
240/120 V AC	2PH, 3W + GND	OVRHS3U401202S
24 V AC	3PH, 4W + GND (Delta)	OVRHS3U402403D
208/120 V AC	3PH, 4W + GND (Wye)	OVRHS3U401203Y
Voltage	**Network Type 2 SPD**	**Part number**
240 V AC	1PH, 2W + GND	OVRHS3U402401P
240/120 V AC	2PH, 3W + GND*	OVRHS3U801202SR
408 V AC	3PH, 3W + GND (Delta)	OVRHS3U404803D
240/120 V AC	3PH, 4W + GND (Hi-Leg)	OVRHS3U401203H
480/277 V AC	3PH, 4W + GND (Wye)	OVRHS3U402773Y
400/230 V AC	3PH, 3W + GND (Wye)	OVRHS3U402303Y

* 80 kA unit including 1283 listed filter, dry contacts option not available

Available option	Suffix
Dry relay contacts	5
Dry relay contacts + mounting bracket	P

Electrical characteristics	
Nominal discharge current rating (L-N)	20 kA
Operating frequency	47–63 Hz
Connection method	Parallel to load
Modes of protection	All modes (L-N, L-G, N-G, LL)
Fault rating (SCCR)	100 kAIC
Response time	Less than 1 nanosecond
Standard monitoring	LED status indicator light
Mechanical characteristics	
Weight	2 lbs. (0.9 kg)
Enclosure type	NEMA 1 non-metallic
Installation location	Indoor
Mounting method	½" (12.7 mm) - 14 NPT thread
Operating temperature	-40 °to 176 °F (-40 °to 80 °C)
Altitude	16,400 ft. (up to 5000 m)
Product design	Individually fused MOVs
Regulations and certifications	
UL 1449 4th edition	Type 1 and Type 2
UL 1283	Only for OVRHS3U802402SR
IEEE C62.41.1, .2, C62.45	Yes
Listed by	UL

OVRH series

OVRHLD (100 A and below, 20 to 30 kA)

Product features

- Listed by ETL to UL 1449 4th Edition for Type 1 SPD applications
- Multiple metal oxide varistors (MOVs) with individual current fusing and thermal disconnects for each MOV
- LED indicating proper functioning of L-N MOVs
- Pre-wired with 18" (450 mm) cables #14 AWG (2 mm²)
- 1-year warranty

Description	Part number
xx kA, yyy V, L-N / N-G (1 LED)	OVRHLDxx-yyy-1
xx kA, yyy V, L1-N / L2-N (2 LEDs)	OVRHLDxx-yyy-2
xx kA, yyy V, L1-G / L2-G (2 LEDs)	OVRHLDxx-yyy-3
xx kA, yyy V, L1-G / N-G (1 LED)	OVRHLDxx-yyy-4
xx kA, yyy V, L-N / L-G (2 LEDs)	OVRHLDxx-yyy-5
xx kA, yyy V, L-N (1 LED)	OVRHLDxx-yyy-6
xx kA, yyy V, L-G (1 LED)	OVRHLDxx-yyy-7
xx kA, yyy V, N-G (0 LED)	OVRHLDxx-yyy-8
xx kA, yyy V, L1-L2 (1 LED)	OVRHLDxx-yyy-9

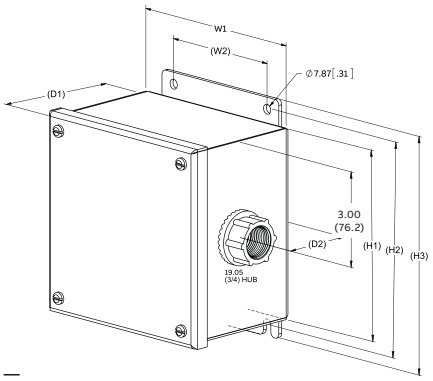
Where "xx" can be 20 kA, 25 kA or 30 kA and "yyy" can be 120 V, 127 V, 230 V or 277 V

Available option Add applicable suffix to the end of the part number	**Suffix**
Mounting bracket	6

Electrical characteristics	
Nominal discharge current rating (L-N)	10 kA
Operating frequency	47–63 Hz
Connection method	Parallel to load
Modes of protection	L-N, L-G, N-G
Fault rating (SCCR)	65 kAIC
Response time	Less than 1 nanosecond
Standard monitoring	LED status indicator lights (1 per phase)
Mechanical characteristics	
Weight	1 lb. (0.5 kg)
Enclosure type	NEMA 1 non-metallic
Installation location	Indoor
Mounting method	NPS thread or bracket
Operating temperature	-40 °to 176 °F (-40 °to 80 °C)
Altitude	16,400 ft. (up to 5000 m)
Product design	Individually fused MOVs, over-current fusing, thermal fusing
Regulations and certifications	
UL 1449 4th edition	Type 1
UL 1283	No
IEEE C62.41.1, .2, C62.45	Yes
Listed by	ETL

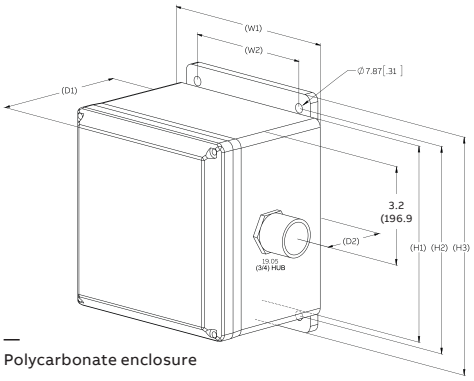
OVRHTP series
Dimensions

Dimensions OVRHTP (60 to 100 kA)



Metal enclosure

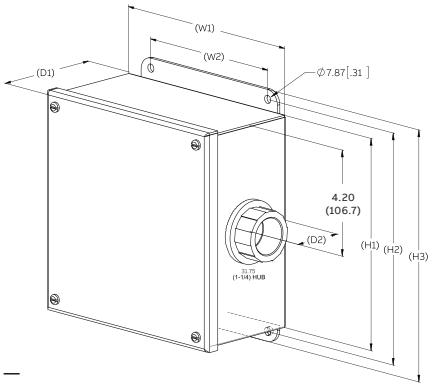
Value	Inches / millimeters
H1	6.00 / 152.4
H2	6.75 / 171.5
H3	7.5 /190.5
W1	6.00 / 152.4
W2	4.00 / 101.6
D1	4.26 / 108.3
D2	2.25 / 57.2



Polycarbonate enclosure

Value	Inches / millimeters
H1	6.42 / 163
H2	6.75 / 171.5
H3	7.75 / 196.9
W1	6.42 / 163
W2	4.50 / 114.3
D1	4.79 / 121.7
D2	2.25 / 57.15

Dimensions OVRHTP (120 to 200 kA)

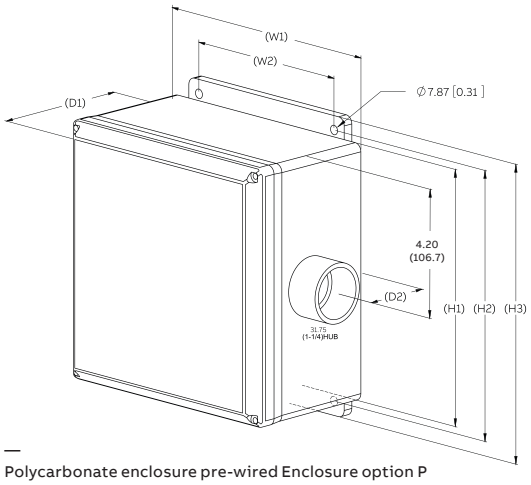


Metal enclosure pre-wired Enclosure option M

Value	Inches / millimeters
H1	8.00 / 203.2
H2	8.75 / 222.3
H3	9.5 / 241.3
W1	8.00 / 203.2
W2	6.00 / 152.4
D1	4.26 / 108.3
D2	2.00 / 50.8

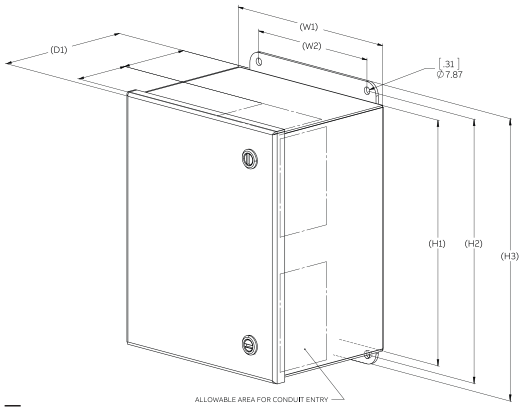
OVRHTP series
Dimensions

Dimensions OVRHTP (120 to 200 kA)



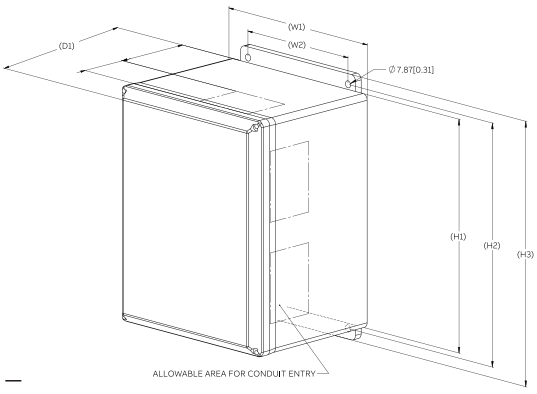
Polycarbonate enclosure pre-wired Enclosure option P

Value	Inches / millimeters
H1	8.42 / 213.9
H2	8.84 / 224.4
H3	9.78 / 248.3
W1	8.42 / 213.9
W2	6.00 / 152.4
D1	4.79 / 121.7
D2	2.25 / 57.2



Metal enclosure with lugs Enclosure option ML

Value	Inches / millimeters
H1	10.00 / 254
H2	10.75 / 273.1
H3	11.5 / 292.1
W1	8.00 / 203.2
W2	6.00 / 152.4
D	6.26 / 159.1

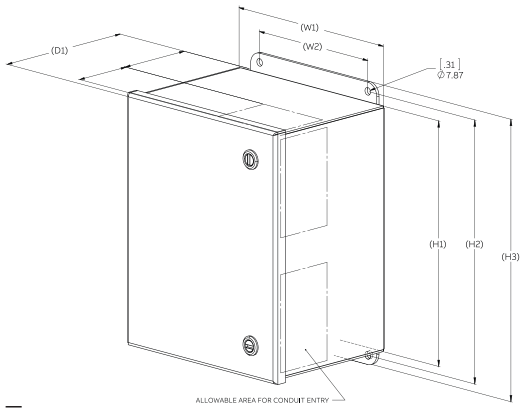


Polycarbonate enclosure with lugs Enclosure option PL

Value	Inches / millimeters
H1	10.35 / 291.9
H2	10.75 / 273.1
H3	11.69 / 296.9
W1	8.35 / 212.1
W2	6.00 / 152.4
D	6.79 / 172.5

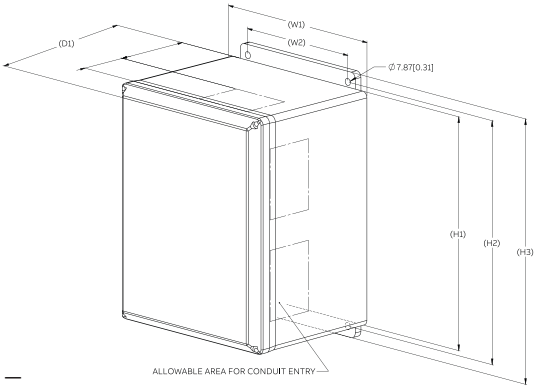
OVRHTP series
Dimensions

Dimensions OVRHTP (240 to 400 kA)



Metal enclosure with lugs Enclosure option ML

H1	10.00 / 254
H2	10.75 / 273.1
H3	11.5 / 292.1
W1	8.00 / 203.2
W2	6.00 / 152.4
D	6.26 / 159.1

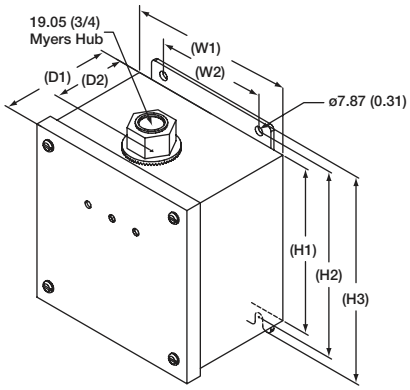


Polycarbonate enclosure with lugs Enclosure option PL

H1	10.35 / 291.9
H2	10.75 / 273.1
H3	11.69 / 296.9
W1	8.35 /212.1
W2	6.00 / 152.4
D	6.79 / 172.5

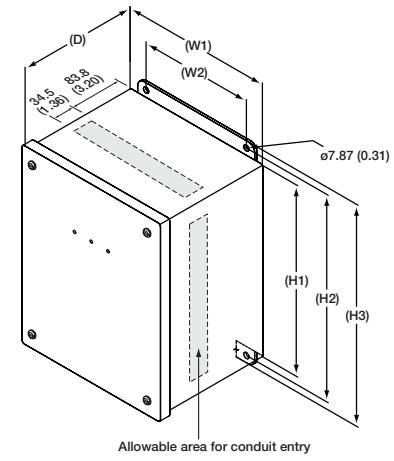
OVRH series
Dimensions

Dimensions OVRHSP (60 to 100 kA)



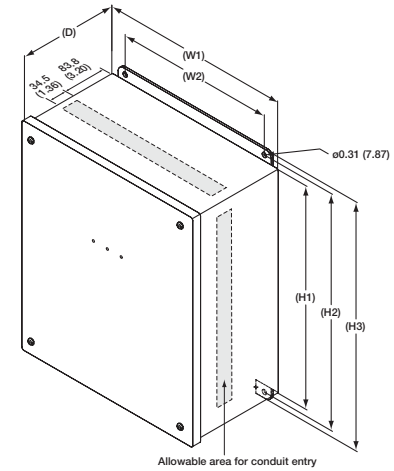
Value	Inches / millimeters
H1	6.00 / 152.4
H2	6.75 / 171.5
H3	7.50 / 190.5
W1	6.00 / 152.4
W2	4.00 / 101.6
D1	4.16 / 105.7
D2	2.00 / 50.8

Dimensions OVRHSP (120 to 160 kA)



Value	Inches / millimeters
H1	10.00 / 254.0
H2	10.75 / 273.1
H3	11.50 / 292.1
W1	8.00 / 203.2
W2	6.00 / 152.4
D	6.20 / 157.5

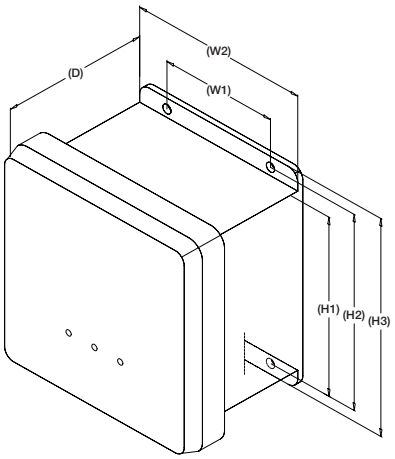
Dimensions



Value	Inches / millimeters
H1	14.00 / 355.6
H2	14.75 / 374.7
H3	15.50 / 393.7
W1	12.00 / 304.8
W2	10.00 / 254.0
D	6.20 / 157.5

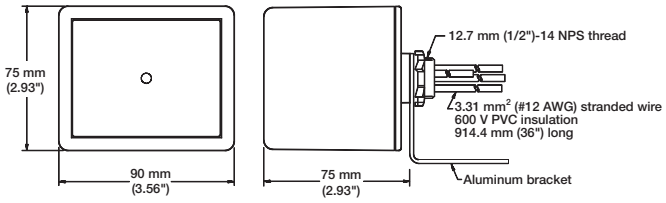
OVRH series
Dimensions

Dimensions OVRHTE



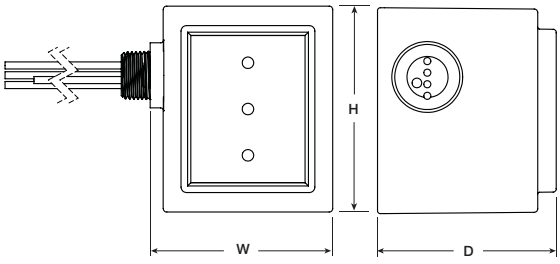
Value	Inches / millimeters
H1	6.17 / 156.7
H2	6.75 / 171.5
H3	7.50 / 190.4
W1	4.01 / 101.9
W2	6.12 / 155.4
D	5.01 / 127.5

Dimensions OVRHT3B



Value	Inches / millimeters
W	3.36 / 90.0
D	2.93 / 75.0
H	2.93 / 75.0

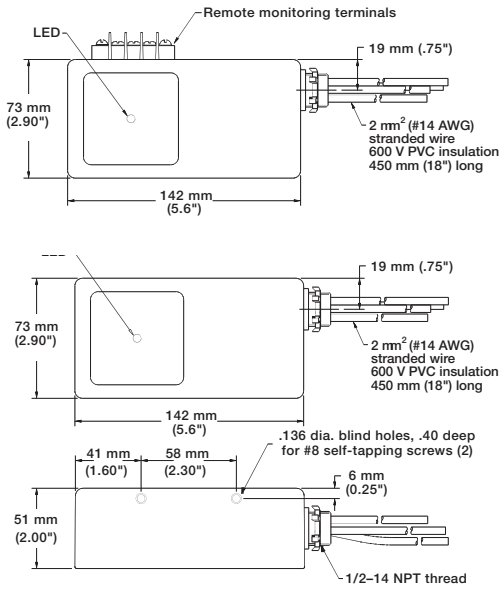
Dimensions OVRHT3C



Value	Inches / millimeters
W	3.18 / 80.8
D	3.10 / 78.7
H	3.56 / 90.4

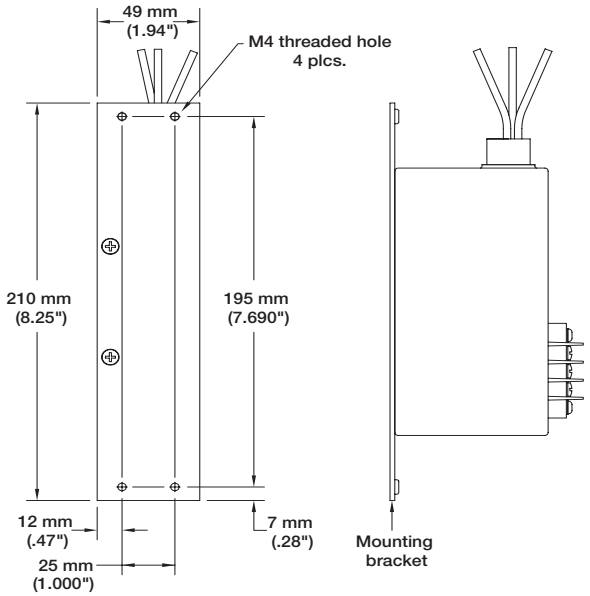
OVRH series
Dimensions

Dimensions OVRHS3U (with and without dry contacts option)



Value	Inches / millimeters
W	2.90 / 73.0
D	2.00 / 51.0
H	5.60 / 142.0

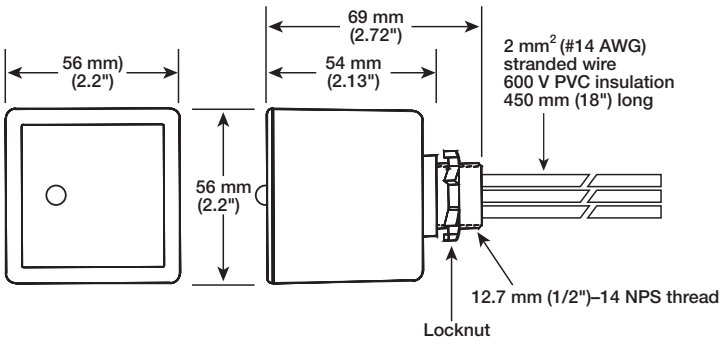
Dimensions mounting bracket OVRHS3U



Value	Inches / millimeters
W	1.94 / 49.0
H	8.25 / 210.0

OVRH series
Dimensions

Dimensions OVRHLD



Value	Inches / millimeters
W	2.20 / 56.0
D	2.13 / 54.0 2.72 / 69.0
H	2.20 / 56.0