



SurgeFreeTM

MODEL

300LS

Service Entrance Protection

The 300LS Series offer robust protection at the entrance of large facilities. The 300LS has an I_{peak} of 300,000A/phase (8 x 20microsecond waveform). Seven times redundant protection paths/phase ensures continuous protection, even in an unlikely fault situation. Twenty-year, no-nonsense warranty; free protection modules for life. Series features mix and match options for a customized protector at stock prices. (See below for options.)

FEATURES

- 300LS: I_{peak} =300,000A/Phase (8 x 20 μ s waveform)
- UL Listed 1449 3rd Ed., NEMA LS1-1992
- Seven times redundant protection paths per phase
- Employs new 40kA high headroom varistors with built-in high-speed thermal disconnect
- Solid copper bus bar construction
- Field-replaceable modules
- EMI/RFI noise filtering
- Continuously monitored protection circuits
- Internal and external status indicators
- NEMA 4, Powder Coated Steel Enclosure



I_{peak} =300,000A

UL 1449, 3rd Ed. Listed

Filter Attenuation

MIL STD 220A (50 Ohm):	120VAC	220 VAC	240VAC	277VAC	347VAC	480VAC
-30db	25kHz	25kHz	25kHz	50kHz	50kHz	50kHz
-40db	125kHz	180kHz	180kHz	100kHz	100kHz	100kHz
-50db	210kHz	210kHz	210kHz	180kHz	170kHz	170kHz
-60db	250kHz	250kHz	250kHz	200kHz	190kHz	190kHz

Mix & Match!

Options Available: Disconnect Switch • Upgraded Front Panel: Surge Event Counter, Beeper, + Status Relay (1 Form C Contacts) • NEMA 4X Enclosure • Low Impedance Micro-Z cable (10AWG) • Flush mount kit

SPD Type:	Type 2
I_n :	20kA
Maximum Continuous Operating VAC (MCOV):	115% Rated Line Voltage
Varistor MCOV:	125% Rated Line Voltage Minimum
SCCR:	100kA AIC
Surge Current/Phase (8/20 μ s):	1 Event - 300kA.
Surge Life/Phase (8/20 μ s):	10,000 Events: 13kA.
Surge Current/Mode (8/20 μ s):	L-N: 170kA; L-G: 130kA; N-G: 120kA; L-L: 300kA
Surge Current/Mode, "D" Models (8/20 μ s):	L-G: 300kA; L-L: 300kA
Response Time:	<5 ns
Status Indicators:	LED Status Indicators (internal & external)
Modes of Protection:	L-N, L-G, L-L, N-G
Operating Altitude:	13,000ft. (4000m)
Temp. (Operating/Storage):	-40° to +70°C/-40° to +85°C
Enclosure:	NEMA 4, 14 gauge steel. powder coated
Dimensions:	17" x 15" x 6" (432 x 381 x 153mm)
Mounting:	17.75" x 13".313"ID - 4 holes, (451 x 330mm/7.9mm ID) - 4 holes
Conduit Fitting Hole:	1" trade size located at the bottom of enclosure
Weight:	35 lbs. (16.7 kg)
UL File Number:	E322161
UL Certification:	UL Listed to 1449 3rd Edition
	UL96A Lightning Protection Master Label Compliant
ARRA Certification:	Complies with ARRA 1605 requirements



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Specifications

Service Entrance Protection

- ANSI/IEEE C62.41-2002
- IEC 61643-1-1998
- UL 1449, 3rd Ed.

Model 300LS

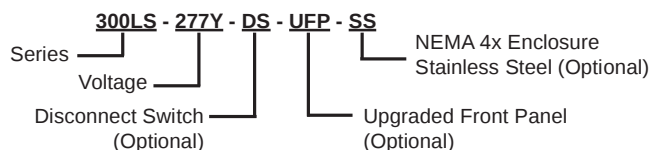
Model 300LS	Service	VPR L-N	VPR L-G	VPR N-G	VPR L-L	6 kV (1.2x50μs) 3 kA (8x20μs) (L-N)***	20 kV (1.2x50μs) 10 kA (8x20μs) (L-N)***
-120S	120VAC, 1φ, 2W+Gnd	900	900	900	n/a	490	580
-120T	120/240VAC, 1φ, 3W+Gnd	900	900	900	1200	520	614
-120Y	120/208, 3φ, 4W+Gnd, Wye	900	900	900	1200	520	614
-220Y	220/380, 3φ, 4W+Gnd, Wye	1500	1500	1500	2000	1008	1164
-220S	220VAC, 1φ, 2W+Gnd	1500	1500	1500	n/a	960	1110
-240Y	240/415, 3φ, 4W+Gnd, Wye	1500	1500	1500	2000	1008	1164
-240S	240VAC, 1φ, 2W+Gnd	1500	1500	1500	n/a	960	1110
-277Y	277/480, 3φ, 4W+Gnd, Wye	1500	1500	1500	2000	1008	1164
-347Y	347/600, 3φ, 4W+Gnd, Wye	1500	1500	1500	2500	1280	1450
-240DCT*	240/120/120, 3φ, 4W+Gnd	900/1500**	900/1500**	900	2000/1800** 1200/2000**	1008/520	1164/614
-240D	240, 3φ, 3W+Gnd, Delta	n/a	1500	n/a	2000	1008 (L-G)	1164
-480D	480, 3φ, 3W+Gnd, Delta	n/a	2000	n/a	4000	1566 (L-G)	1766
-600D	600, 3φ, 3W+Gnd, Delta	n/a	2000	n/a	4000	1776 (L-G)	1970

* High-leg Delta Center Tapped

** High-leg

*** Actual Measurements w/6" Lead Length

Model Ordering:



Note: Additional options: Low-impedance MZ cable (10AWG) and flush mount kit must be ordered as separate line items.

Energy Absorption (8/20μs) in joules: 17,664 - 75,600J

A Note On Headroom A surge protector responds to increases in voltage. Surge protectors triggered by the nominal line voltage are undesirable, consequently headroom is always factored into surge protector design. Long duration voltage swells occur on power lines and can damage a surge protector, leaving facility equipment vulnerable. By employing higher headroom, continuity of surge protection is guaranteed. This feature is standard in MCG surge protectors. Higher headroom allows varistors to ride out voltage swells while ensuring that let-through voltage remains within CBEMA (now ITIC) guidelines. The CBEMA curve is the most accepted graph worldwide for equipment susceptibility analysis.

A Note On LS Series VPR These VPR represent standard wiring plus the upstream overcurrent safety device (circuit breaker). For best performance, use MCG's Micro-Z Cable (optional).

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SurgeFreeTM

MODEL 400LS

Service Entrance Protection

For uncompromising protection at the main service panel, choose the 400LS AC power line protector. The unit offers 400kA/phase, 10 times redundant protection paths/phase and new 40kA varistors with built-in high speed thermal disconnect. Series features mix and match options for a customized protector at stock prices. (See below.)

FEATURES

- 400LS: I_{peak}=400,000A/Phase (8 x 20μs waveform)
- UL Listed 1449 3rd Ed., NEMA LS1-1992
- Ten times redundant protection paths per phase
- Employs new 40kA high headroom varistors with built-in high-speed thermal disconnect
- Solid copper bus bar construction
- Field-replaceable modules
- EMI/RFI noise filtering
- Continuously monitored protection circuits
- Internal and external status indicators
- NEMA 4, Powder Coated Steel Enclosure



I_{peak}=400,000A

UL 1449, 3rd Ed. Listed

Filter Attenuation

MIL STD 220A (50 Ohm):	120VAC	220 VAC	240VAC	277VAC	347VAC	480VAC
-30db	25kHz	25kHz	25kHz	50kHz	50kHz	50kHz
-40db	125kHz	180kHz	180kHz	100kHz	100kHz	100kHz
-50db	210kHz	210kHz	210kHz	180kHz	170kHz	170kHz
-60db	250kHz	250kHz	250kHz	200kHz	190kHz	190kHz

Mix & Match!

Options Available: Disconnect Switch • Upgraded Front Panel: Surge Event Counter, Beeper, + Status Relay (1 Form C Contacts) • NEMA 4X Enclosure • Low Impedance Micro-Z cable (10AWG) • Flush mount kit

SPD Type:	Type 2
I _n :	20kA
Maximum Continuous Operating VAC (MCOV):	115% Rated Line Voltage
Varistor MCOV:	125% Rated Line Voltage Minimum
SCCR:	100kA AIC
Surge Current/Phase (8/20μs):	1 Event - 400kA.
Surge Life/Phase (8/20μs):	10,000 Events: 19kA.
Surge Current/Mode (8/20μs):	L-N: 240kA; L-G: 160kA; N-G: 240kA; L-L: 400kA
Surge Current/Mode, "D" Models (8/20μs):	L-G: 400kA; L-L: 400kA
Response Time:	<5 ns
Status Indicators:	LED Status Indicators (internal & external)
Modes of Protection:	L-N, L-G, L-L, N-G
Operating Altitude:	13,000ft. (4000m)
Temp. (Operating/Storage):	-40° to +70°C/-40° to +85°C
Enclosure:	NEMA 4, 14 gauge steel, powder coated
Dimensions:	17" x 15" x 6" (432 x 381 x 153mm)
Mounting:	17.75" x 13" / 313" ID - 4 holes, (451 x 330mm/7.9mm ID) - 4 holes
Conduit Fitting Hole:	1" trade size located at the bottom of enclosure
Weight:	43 lbs. (19.5 kg)
UL File Number:	E322161
UL Certification:	UL Listed to 1449 3rd Edition
	UL96A Lightning Protection Master Label Compliant
ARRA Certification:	Complies with ARRA 1605 requirements



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Specifications

Service Entrance Protection

- ANSI/IEEE C62.41-2002
- IEC 61643-1-1998
- UL 1449, 3rd Ed.

Model 400LS

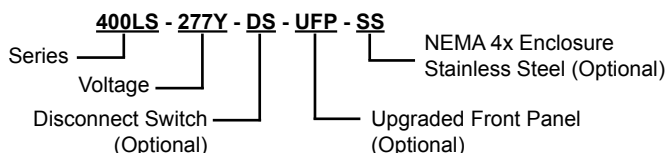
Model 400LS	Service	VPR L-N	VPR L-G	VPR N-G	VPR L-L	6kV (1.2x50μs) 3kA (8x20μs) (L-N)***	20kV (1.2x50μs) 10kA (8x20μs) (L-N)***
-120S	120VAC, 1φ, 2W+Gnd	900	900	800	n/a	480	570
-120T	120/240VAC, 1φ, 3W+Gnd	900	900	800	1200	505	600
-120Y	120/208, 3φ, 4W+Gnd, Wye	900	900	800	1200	505	600
-220Y	220/380, 3φ, 4W+Gnd, Wye	1500	1500	1500	2000	990	1130
-220S	220VAC, 1φ, 2W+Gnd	1500	1500	1500	n/a	940	1070
-240Y	240/415, 3φ, 4W+Gnd, Wye	1500	1500	1500	2000	970	1130
-240S	240VAC, 1φ, 2W+Gnd	1500	1500	1500	n/a	940	1070
-277Y	277/480, 3φ, 4W+Gnd, Wye	1500	1500	1500	2000	970	1130
-347Y	347/600, 3φ, 4W+Gnd, Wye	1500	1500	1500	2500	1260	1400
-240DCT*	240/120/120, 3φ, 4W+Gnd	900/1500**	900/1500**	900	2000/1800** 1200/2000**	970/505	1130/600
-240D	240, 3φ, 3W+Gnd, Delta	n/a	1500	n/a	2000	970 (L-G)	1130 (L-G)
-480D	480, 3φ, 3W+Gnd, Delta	n/a	2000	n/a	4000	1548 (L-G)	1720 (L-G)
-600D	600, 3φ, 3W+Gnd, Delta	n/a	2000	n/a	4000	1755 (L-G)	1930 (L-G)

* High-leg Delta Center Tapped

** High-leg

*** Actual Measurements w/6" Lead Length

Model Ordering:



Note: Additional options: Low-impedance MZ cable (10AWG) and flush mount kit must be ordered as separate line items.

Energy Absorption (8/20μs) in joules: 26,496 - 108,000J

A Note On Headroom A surge protector responds to increases in voltage. Surge protectors triggered by the nominal line voltage are undesirable, consequently headroom is always factored into surge protector design. Long duration voltage swells occur on power lines and can damage a surge protector, leaving facility equipment vulnerable. By employing higher headroom, continuity of surge protection is guaranteed. This feature is standard in MCG surge protectors. Higher headroom allows varistors to ride out voltage swells while ensuring that let-through voltage remains within CBEMA (now ITIC) guidelines. The CBEMA curve is the most accepted graph worldwide for equipment susceptibility analysis.

A Note On LS Series VPR These VPR represent standard wiring plus the upstream overcurrent safety device (circuit breaker). For best performance, use MCG's Micro-Z Cable (optional).

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SurgeFreeTM

MODEL

560LS

Service Entrance Protection

For uncompromising protection at the main service panel, choose the the 560LS AC power line protector. The unit offers 560kA/phase, 14 times redundant protection paths/phase and new 40kA varistors with built-in high speed thermal disconnect. You can't buy a stronger or safer SPD anywhere. Series features mix and match options for a customized protector at stock prices. (See below.)

FEATURES

- 560LS: I_{peak}=560,000A/Phase (8 x 20μs waveform)
- UL Listed 1449 3rd Ed., NEMA LS1-1992
- Fourteen times redundant protection paths per phase
- Employs new 40kA high headroom varistors with built-in high-speed thermal disconnect
- Solid copper bus bar construction
- Field-replaceable modules
- EMI/RFI noise filtering
- Continuously monitored protection circuits
- Internal and external status indicators
- NEMA 4, Powder Coated Steel Enclosure

I_{peak}=560,000A

UL 1449, 3rd Ed. Listed

Filter Attenuation

MIL STD 220A (50 Ohm):	120VAC	220 VAC	240VAC	277VAC	347VAC	480VAC
-30db	25kHz	25kHz	25kHz	50kHz	50kHz	50kHz
-40db	125kHz	180kHz	180kHz	100kHz	100kHz	100kHz
-50db	210kHz	210kHz	210kHz	180kHz	170kHz	170kHz
-60db	250kHz	250kHz	250kHz	200kHz	190kHz	190kHz

Mix & Match!

Options Available: Disconnect Switch • Upgraded Front Panel: Surge Event Counter, Beeper, + Status Relay (1 Form C Contacts) • NEMA 4X Enclosure • Low Impedance Micro-Z cable (10AWG) • Flush mount kit

SPD Type: Type 2
I _n : 20kA
Maximum Continuous Operating VAC (MCOV): 115% Rated Line Voltage
Varistor MCOV: 125% Rated Line Voltage Minimum
SCCR: 100kA AIC (All models except -240D, -480D, -600D, -277Y, and -347Y which are 5kAAIC)
Surge Current/Phase (8/20μs): 1 Event - 560kA.
Surge Life/Phase (8/20μs): 10,000 Events: 25kA.
Surge Current/Mode (8/20μs): L-N: 320kA; L-G: 240kA; N-G: 240kA; L-L: 560kA
Surge Current/Mode, "D" Models (8/20μs): L-G: 560kA; L-L: 560kA
Response Time: <5 ns
Status Indicators: LED Status Indicators (internal & external)
Modes of Protection: L-N, L-G, L-L, N-G
Operating Altitude: 13,000ft. (4000m)
Temp. (Operating/Storage): -40° to +70°C/-40° to +85°C
Enclosure: NEMA 4, 14 gauge steel, powder coated
Dimensions: 17" x 15" x 6" (432 x 381 x 153mm)
Mounting: 17.75" x 13"/313"ID - 4 holes, (451 x 330mm/7.9mm ID) - 4 holes
Conduit Fitting Hole: 1" trade size located at the bottom of enclosure
Weight: 47 lbs. (21.4 kg)
UL File Number: E322161
UL Certification: UL Listed to 1449 3rd Edition
UL96A Lightning Protection Master Label Compliant
ARRA Certification: Complies with ARRA 1605 requirements



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Specifications

- ANSI/IEEE C62.41-2002
- IEC 61643-1-1998
- UL 1449, 3rd Ed.

Building Entry Protection

Model 160MXT

Model 160MXT	Service	VPR L-N	VPR L-G	VPR N-G	VPR L-L	20kV, 1.2/50 μ s 10kA, 8/20 μ s L-N**
-120T	120/240VAC, 1 ϕ , 3W+Gnd	800	900	700	1200	550
-120Y	120/208VAC, 3 ϕ , 4W+Gnd, Wye	800	900	700	1200	550
-240DCT*	240/120/120VAC, 3 ϕ , 4W+Gnd	800/1500	900/1500	1200	1200/2500	550/1040
-220Y	220/380VAC, 3 ϕ , 4W+Gnd, Wye	1500	1500	1200	2500	1040
-240Y	240/415VAC, 3 ϕ , 4W+Gnd, Wye	1500	1500	1200	2500	1040
-277Y	277/480VAC, 3 ϕ , 4W+Gnd, Wye	1500	1500	1200	2500	1040
-240D	240VAC, 3 ϕ , 3W+Gnd, Delta	n/a	1500	n/a	2500	1040 (L-G)

* High-leg Delta Center Tapped
 ** Actual Measurements w/ 6" Lead Length

Energy Absorption (8/20 μ s) in joules: 11,000J - 43,200J

A Note On Headroom A surge protector responds to increases in voltage. Surge protectors triggered by the nominal line voltage are undesirable, consequently headroom is always factored into surge protector design. Long duration voltage swells occur on power lines and can damage a surge protector, leaving facility equipment vulnerable. By employing higher headroom, continuity of surge protection is guaranteed. This feature is standard in MCG surge protectors. Higher headroom allows varistors to ride out voltage swells while ensuring that let-through voltage remains within CBEMA (now ITIC) guidelines. The CBEMA curve is the most accepted graph worldwide for equipment susceptibility analysis.

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