# 300W Adapter 54V Series



Single Output 300W PFC Data Sheet

For the latest revision, please visit power.liteon.com

#### **Description**

This product is an 300watts AC to DC adapter intended for use in IPC Systems, Communication Systems, Embedded Systems, PoE Systems. This adapter operates at 90 to 264 VAC input voltage. The unit meets CISPR32 EN55032 CLASS B, EN55024 and FCC PART 15B Class B emission limits, and is designed for ITE application.

#### **Features**

- \* Full AC input voltage design with C16 socket
- \* Withstand 300Vac surge voltage for 5 seconds
- \* Full Protections: Short-circuit/ Over-voltage/

Over-current/ Over temperature operating.

- \* Energy efficiency level VI compliance
- \* Slim and compact in size
- \* Various DC plug types available
- \* IEC/EN 62368-1 design compliance
- \* Up to 5000 meters operating altitude (note #4)
- \* High reliability





## **Electrical Specification**

Model Name	PA-1301-54	
Output		
Rated power	300W	
Rated voltage	54V	
Rated current	5.56A	
Ripple & Noise(max.) (note #2)	500mV	
Line & load regulation	±5%	
Hold-up time(typ.)	10ms	
Timing: AC ON delay / rising (max.)	3 sec / 50ms	
Input		
Rated voltage range	100~240Vac	
Operated voltage range	90~264Vac, 300Vac for 5 sec	
Current range (max.)	4A/100Vac	
Inrush current	No component damaged ( <l²*t).< td=""></l²*t).<>	

Leakage current (max.)  Average efficiency (min.)  Protection Function  Over voltage (max.)  140% of rated voltage, latch protection until AC input reset  Over current (max.)  150% of rated current, hiccup mode protection until fault is removed  Short circuit at O/P  No damage, hiccup mode protection until fault is removed  No damage, latch protection until AC input reset  Others  WITBF (min.) (note83)  300K hours @ rated load  Environment  Temperature (note85)  (operating) -40°45°C / (storage) -40°85°C  Humidity (operating) 10°90% RH non-condensing / (storage) 5°95% RH  Altitude (max.)  So00 meters  Mechanical  Dimension  180.0(1)*82.0(W)*38mm(H)  Vibration  10°500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.)  900g  Safety  Standard  IEC/EN 62368-1, CNS14336-1  Withstand voltage  Input-Output: 4242VDC  Isolation resistance(min.)  Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  ENSO32 (CISPR32)  Conducted EMI: class B / Radiated EMI: class B  FCC  Conducted EMI: class B / Radiated EMI: class B  FCC  ENS1000-3-2  ENS1000-4-2  ESD: 28KV contact discharge / ±15KV contact discharge  ENS1000-4-3  Radiated RF immunity: 3V/m  ENS1000-4-5  Surge: ±2KV DM / ±4KV CM	Frequency range	50-60Hz
Protection Function  Over voltage (max.)  140% of rated voltage, latch protection until AC input reset  150% of rated current, hiccup mode protection until fault is removed  Short circuit at O/P  No damage, hiccup mode protection until fault is removed  Over temperature  No damage, latch protection until AC input reset  Others  WIBF (min.) (note#3)  300K hours @ rated load  Environment  Temperature (note#5)  (operating) -40~45°C / (storage) -40~85°C  Humidity  (operating) 10~90% RH non-condensing / (storage) 5~95% RH  Altitude (max.)  5000 meters  Mechanical  Dimension  180.0(L)*82.0(W)*38mm(H)  Vibration  10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.)  900g  Safety  Standard  IEC/EN 62368-1, CNS14336-1  Withstand voltage  Input-Output: 4242VDC  Isolation resistance(min.)  Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  ENS5032 (CISPR32)  Conducted EMI: class B / Radiated EMI: class B  FCC  Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2  Harmonic distortion: Class D  EN51000-4-3  Radiated RF immunity: 3V/m  ENF1: ±1KV (AC port)	Leakage current (max.)	0.25mA at 240Vac
Over voltage (max.)  140% of rated voltage, latch protection until AC input reset  Over current (max.)  150% of rated current, hiccup mode protection until fault is removed  No damage, hiccup mode protection until fault is removed  No damage, latch protection until AC input reset  Others  MTBF (min.) (note#3)  300K hours @ rated load  Environment  Temperature (note#5)  (operating) -40~45°C / (storage) -40~85°C  Humidity  (operating) 10~90% RH non-condensing / (storage) 5~95% RH  Altitude (max.)  5000 meters  Mechanical  Dimension  180.0(L)*82.0(W)*38mm(H)  Vibration  10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.)  900g  Safety  Standard  IEC/EN 62368-1, CNS14336-1  Withstand voltage  Input-Output: 4242VDC  Isolation resistance(min.)  Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  ENS5032 (CISPR32)  Conducted EMI: class B / Radiated EMI: class B  FCC  Conducted EMI: class B / Radiated EMI: class B  ENG1000-3-2  Harmonic distortion: Class D  EN51000-4-2  ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3  EFT: ±1KV (AC port)	Average efficiency (min.)	90%
Over current (max.)  150% of rated current, hiccup mode protection until fault is removed  Short circuit at O/P  No damage, hiccup mode protection until fault is removed  Others  WTBF (min.) (note83)  300K hours @ rated load  Environment  Temperature (note85)  Humidity (operating) -40~45°C / (storage) -40~85°C  Humidity (operating) 10~90% RH non-condensing / (storage) 5~95% RH  Altitude (max.)  S000 meters  Mechanical  Dimension 180.0(L)*82.0(W)*38mm(H)  Vibration 10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.) 900g  Safety  Standard IEC/EN 62368-1, CNS14336-1  Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  ENS5032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-3 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-4 EFT: ±1KV (AC port)	Protection Function	
Short circuit at O/P       No damage, hiccup mode protection until fault is removed         Over temperature       No damage, latch protection until AC input reset         Others         MTBF (min.) (note#3)       300K hours @ rated load         Environment         Temperature (note#5)       (operating) -40~45°C / (storage) -40~85°C         Humidity       (operating) 10~90% RH non-condensing / (storage) 5~95% RH         Altitude (max.)       5000 meters         Mechanical         Dimension       180.0(L)*82.0(W)*38mm(H)         Vibration       10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)         Weight (typ.)       900g         Safety         Standard       IEC/EN 62368-1, CNS14336-1         Withstand voltage       Input-Output: 4242VDC         Isolation resistance(min.)       Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH         EMC         ENS5032 (CISPR32)       Conducted EMI: class B / Radiated EMI: class B         ENG1000-3-2       Harmonic distortion: Class D       Paramonic distortion: Class D       ENG1000-4-2       ESD: ±8KV contact discharge / ±15KV contact discharge         EN61000-4-3       ER61000-4-	Over voltage (max.)	140% of rated voltage, latch protection until AC input reset
Over temperature       No damage, latch protection until AC input reset         Others         MTBF (min.) (note#3)       300K hours @ rated load         Environment         Temperature (note#5)       (operating) -40~45°C / (storage) -40~85°C         Humidity       (operating) 10~90% RH non-condensing / (storage) 5~95% RH         Altitude (max.)       5000 meters         Mechanical         Dimension       180.0(L)*82.0(W)*38mm(H)         Vibration       10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)         Weight (typ.)       900g         Safety         Standard       IEC/EN 62368-1, CNS14336-1         Withstand voltage       Input-Output: 4242VDC         Isolation resistance(min.)       Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH         EMC         ENS5032 (CISPR32)       Conducted EMI: class B / Radiated EMI: class B         FCC       Conducted EMI: class B / Radiated EMI: class B         EN61000-3-2       ENSC 2 8KV contact discharge / ±15KV contact discharge <th< td=""><td>Over current (max.)</td><td>150% of rated current, hiccup mode protection until fault is removed</td></th<>	Over current (max.)	150% of rated current, hiccup mode protection until fault is removed
MTBF (min.) (note#3) 300K hours @ rated load  Environment  Temperature (note#5) (operating) -40~45°C / (storage) -40~85°C  Humidity (operating) 10~90% RH non-condensing / (storage) 5~95% RH  Altitude (max.) 5000 meters  Mechanical  Dimension 180.0(L)*82.0(W)*38mm(H)  Vibration 10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.) 900g  Safety  Standard IEC/EN 62368-1, CNS14336-1  Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  ENS5032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	Short circuit at O/P	No damage, hiccup mode protection until fault is removed
### BTBF (min.) (note#3)  ### BTBF (min.) (operating) -40~45°C / (storage) -40~85°C  ### BTBF (min.) (operating) -40~85°C  ### BTBF (min.) (operation) -40~85°C  #	Over temperature	No damage, latch protection until AC input reset
Environment  Temperature (note#5) (operating) -40~45°C / (storage) -40~85°C  Humidity (operating) 10~90% RH non-condensing / (storage) 5~95% RH  Altitude (max.) 5000 meters  Mechanical  Dimension 180.0(L)*82.0(W)*38mm(H)  Vibration 10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.) 900g  Safety  Standard IEC/EN 62368-1, CNS14336-1  Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  ENS5032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-3 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-4 EFT: ±1KV (AC port)	Others	
Temperature (note#5) (operating) -40~45°C / (storage) -40~85°C  Humidity (operating) 10~90% RH non-condensing / (storage) 5~95% RH  Altitude (max.) 5000 meters  Mechanical  Dimension 180.0(L)*82.0(W)*38mm(H)  Vibration 10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.) 900g  Safety  Standard IEC/EN 62368-1, CNS14336-1  Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  ENS5032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	MTBF (min.) (note#3)	300K hours @ rated load
Humidity (operating) 10~90% RH non-condensing / (storage) 5~95% RH  Altitude (max.) 5000 meters  Mechanical  Dimension 180.0(L)*82.0(W)*38mm(H)  Vibration 10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.) 900g  Safety  Standard IEC/EN 62368-1, CNS14336-1  Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25℃, 70%RH  EMC  EN55032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-3 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-4 EFT: ±1KV (AC port)	Environment	
Altitude (max.)  Mechanical  Dimension  180.0(L)*82.0(W)*38mm(H)  Vibration  10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.)  900g  Safety  Standard  IEC/EN 62368-1, CNS14336-1  Withstand voltage  Input-Output: 4242VDC  Isolation resistance(min.)  Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  EN55032 (CISPR32)  Conducted EMI: class B / Radiated EMI: class B  FCC  Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2  Harmonic distortion: Class D  EN61000-4-2  ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-4  EFT: ±1KV (AC port)	Temperature (note#5)	(operating) -40~45°⊂ / (storage) -40~85°⊂
MechanicalDimension180.0(L)*82.0(W)*38mm(H)Vibration10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)Weight (typ.)900gSafetyStandardIEC/EN 62368-1, CNS14336-1Withstand voltageInput-Output: 4242VDCIsolation resistance(min.)Input-Output: 30Mohm @ 500VDC, 25°C, 70%RHEMCEN55032 (CISPR32)Conducted EMI: class B / Radiated EMI: class BFCCConducted EMI: class B / Radiated EMI: class BEN61000-3-2Harmonic distortion: Class DEN61000-4-2ESD: ±8KV contact discharge / ±15KV contact dischargeEN61000-4-3Radiated RF immunity: 3V/mEN61000-4-4EFT: ±1KV (AC port)	Humidity	(operating) 10~90% RH non-condensing / (storage) 5~95% RH
Dimension 180.0(L)*82.0(W)*38mm(H)  Vibration 10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.) 900g  Safety  Standard IEC/EN 62368-1, CNS14336-1  Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  EN55032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	Altitude (max.)	5000 meters
Vibration 10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)  Weight (typ.) 900g  Safety  Standard IEC/EN 62368-1, CNS14336-1  Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  EN55032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	Mechanical	
Weight (typ.)900gSafetyIEC/EN 62368-1, CNS14336-1Withstand voltageInput-Output: 4242VDCIsolation resistance(min.)Input-Output: 30Mohm @ 500VDC, 25°C, 70%RHEMCEMCEN55032 (CISPR32)Conducted EMI: class B / Radiated EMI: class BFCCConducted EMI: class B / Radiated EMI: class BEN61000-3-2Harmonic distortion: Class DEN61000-4-2ESD: ±8KV contact discharge / ±15KV contact dischargeEN61000-4-3Radiated RF immunity: 3V/mEN61000-4-4EFT: ±1KV (AC port)	Dimension	180.0(L)*82.0(W)*38mm(H)
Safety  Standard IEC/EN 62368-1, CNS14336-1  Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  EN55032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	Vibration	10~500 Hz, 5G 20min./1cycle per axis for all axes (X, Y, Z)
Standard IEC/EN 62368-1, CNS14336-1  Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  EN55032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	Weight (typ.)	900g
Withstand voltage Input-Output: 4242VDC  Isolation resistance(min.) Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  EN55032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	Safety	
Input-Output: 30Mohm @ 500VDC, 25°C, 70%RH  EMC  EN55032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	Standard	IEC/EN 62368-1, CNS14336-1
EMC  EN55032 (CISPR32) Conducted EMI: class B / Radiated EMI: class B  FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	Withstand voltage	Input-Output: 4242VDC
EN55032 (CISPR32)  Conducted EMI: class B / Radiated EMI: class B  FCC  Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2  Harmonic distortion: Class D  EN61000-4-2  ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3  Radiated RF immunity: 3V/m  EN61000-4-4  EFT: ±1KV (AC port)	Isolation resistance(min.)	Input-Output: 30Mohm @ 500VDC, 25°⊂, 70%RH
FCC Conducted EMI: class B / Radiated EMI: class B  EN61000-3-2 Harmonic distortion: Class D  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	EMC	
EN61000-3-2 Harmonic distortion: Class D  EN61000-4-2 ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3 Radiated RF immunity: 3V/m  EN61000-4-4 EFT: ±1KV (AC port)	EN55032 (CISPR32)	Conducted EMI: class B / Radiated EMI: class B
EN61000-4-2  ESD: ±8KV contact discharge / ±15KV contact discharge  EN61000-4-3  Radiated RF immunity: 3V/m  EN61000-4-4  EFT: ±1KV (AC port)	FCC	Conducted EMI: class B / Radiated EMI: class B
EN61000-4-3 Radiated RF immunity: 3V/m EN61000-4-4 EFT: ±1KV (AC port)	EN61000-3-2	Harmonic distortion: Class D
EN61000-4-4	EN61000-4-2	ESD: ±8KV contact discharge / ±15KV contact discharge
	EN61000-4-3	Radiated RF immunity: 3V/m
EN61000-4-5 Surge: ±2KV DM / ±4KV CM	EN61000-4-4	EFT: ±1KV (AC port)
	EN61000-4-5	Surge: ±2KV DM / ±4KV CM
EN61000-4-6 Conducted RF immunity: 3V/m	EN61000-4-6	Conducted RF immunity: 3V/m
EN61000-4-8 Magnetic field immunity: 3A/m	EN61000-4-8	Magnetic field immunity: 3A/m
EN61000-4-11 Voltage dip immunity	EN61000-4-11	Voltage dip immunity

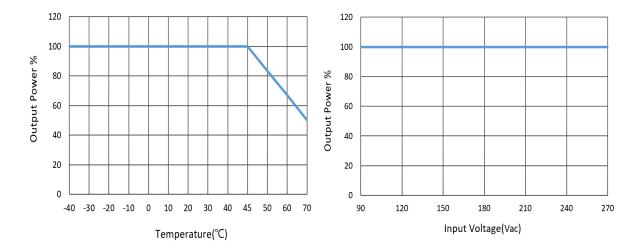
## Notes

#1: All specification defined at 230Vac/50Hz, rated power and 25°C ambient temperature if not mentioned specifically.

#2: Ripple noise is measured by a 30cm length, twisted wires with 0.47uF MLCC & 47uF low ESR capacitor for  $0^{\circ}\text{C}$  to

45°C.

- #3: Calculated by Telcordia SR332 at 25  $^{\circ}$ C ambient temperature.
- #4: When operating altitude is higher than 2000m, the environment temperature derating factor is 0.36°C/100m.
- #5: De-rating curve of ambient temperature:



## **Mechanical Specification**



- NOIES: UNLESS OTHERWISE SPECIFI

  1. ALL DIMENSIONS ARE IN mm.
  TOLERANCES TO BE ±0.25 mm.
  2. PARTS SPECIFIED AS FOLLOWS:
  2-1. ENCLOSURE:

  \* MEET V-0 FLAMMABILITY.

  \* COLOR: GE #701 (BLACK).

  \* TEXTURE: MT-11020(MAT).
  2-2. AC RECEPTACLE:

  \* IEC 60320 C16 CERTIFIED.

  \* COLOR: BLACK.

  2-3. DC OUTPUT:

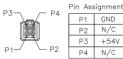
  \* CABLE: UL 11353 #16AWG

  \* JACKET COLOR: BLACK.

  \* PLUG INSULATOR: BLACK.

  \* PLUG POLARITY:

  Pin Assic



MAIN LABEL

