



# 90W Desktop Adapter Series



## Features

- US DoE Level VI Efficiency Compliance
- CoC Tier 2 Compliance
- OVP, OCP, SCP, OTP Protections
- Class B EMI
- Operating Altitude to 5,000 Meters

## Applications

- Networking Device
- Monitor
- Notebook
- Industrial Equipment



# AA90x Series Specifications<sup>1</sup>

| Model                                       |  | AA90W-120B-R <sup>2</sup>   | AA90U-120B-R             |
|---|--|---|--------------------------|
| Output                                      | DC Output Voltage  | 12.0V   |                          |
|   | Max Current  | 7.5A  |                          |
|   | Output Power   | 90.0W   |                          |
|   | Regulation   | ± 5%  |                          |
|   | Ripple & Noise P-P(max) <sup>3</sup>   | 120mV   |                          |
| Input                                       | AC Input Voltage Range   | 90 to 264VAC  |                          |
|   | AC Input Voltage Rating  | 100 VAC to 240VAC   |                          |
|   | AC Input Frequency   | 47 to 63Hz  |                          |
|   | Inrush Current   | 200A @ 240VAC Max Load  |                          |
|   | Power Factor   | >0.95 @ 120 VAC; >0.90 @ 240 VAC Full Load                                      |                          |
|   | No Load Power Consumption at 115VAC Input  | ≤ 0.077W  |                          |
|   | No Load Power Consumption at 230VAC Input  | ≤ 0.085W  |                          |
|   | 115VAC Average Efficiency <sup>4</sup>   | ≥ 89.0%   |                          |
|   | 230VAC Average Efficiency <sup>4</sup>   | ≥ 90.4%   |                          |
|   | 230VAC 10% Load Efficiency <sup>4</sup>  | ≥ 89.5%   |                          |
|   | Leakage Current  | 0.25mA max. @254vac, 50Hz   | 3.5mA max. @254vac, 50Hz |
| Protection                                  | Over-Voltage   | 16V max., Auto-recovery   |                          |
|   | Short Circuit  | Auto-recovery   |                          |
|   | Over-Current   | 10.5A max., Auto-recovery   |                          |
|   | Over-Temperature   | Auto-recovery   |                          |
| Environmental                               | Operating Temperature <sup>5</sup>   | -10°C to +70°C  |                          |
|   | Operating Humidity   | 5% to 90% RH max  |                          |
|   | Operating Altitude   | Up to 5000m   |                          |
| Safety and EMC Standards (Designed to meet) | Dielectric Withstand (HI-POT)  | Primary to Secondary: 3000VAC or 4242Vdc for 1min, 10mA                         |                          |
|   | Insulation Resistance  | Primary to Secondary: >7M ohm for 500VDC  |                          |
|   | Standards  | IEC 62368-1, UL 62368-1 3 <sup>rd</sup> Edition                                 |                          |
|   | EMI Emissions  | EN55032 Class B, FCC Class B, CAN ICES-003(B)/NMB-003(B) Conducted and Radiated |                          |
|   | Harmonic Current Emissions   | IEC 61000-3-2   |                          |
| Mechanical                                  | Dimensions (L x W x H)   | 141.5mm (5.57in) x 62.5mm (2.46in) x 33mm (1.30in)                              |                          |
|   | Cable Length   | 1200mm 16AWG  |                          |
|   | Output Connector   | 2.1mm x 5.5mm x 9.5mm barrel  |                          |
|   | Input Connector  | IEC 60320 C8  | IEC 60320 C14            |
| Notes                                       | <ol style="list-style-type: none"> <li>The specifications defined are at ambient temperature of 25°C, unless otherwise specified.</li> <li>Special order model. Minimum order quantity applies.</li> <li>20MHz bandwidth frequency oscilloscope, add a 0.1µF multilayer Cap. and Low ESR Electrolytic Cap. (10µF) at output connector terminals (nominal line voltage, full load).</li> <li>Efficiency is measured after 30 minutes burn-in.</li> <li>Refer to Operating temperature curve.</li> </ol> |   |                          |



# AA90x Series Specifications<sup>1</sup>

| Model                                       |  | AA90W-190B-R <sup>2</sup>  | AA90U-190B-R             |
|---|--|--|--------------------------|
| Output                                      | DC Output Voltage  | 19.0V  |                          |
|   | Max Current  | 4.74A  |                          |
|   | Output Power   | 90.06W   |                          |
|   | Regulation   | ± 5%   |                          |
|   | Ripple & Noise P-P(max) <sup>3</sup>   | 190mV  |                          |
| Input                                       | AC Input Voltage Range   | 90 to 264VAC   |                          |
|   | AC Input Voltage Rating  | 100 VAC to 240VAC  |                          |
|   | AC Input Frequency   | 47 to 63Hz   |                          |
|   | Inrush Current   | 200A @ 240VAC Max. Load  |                          |
|   | Power Factor   | >0.95 @ 120 VAC; >0.90 @ 240 VAC Full Load   |                          |
|   | No Load Power Consumption at 115VAC Input  | ≤ 0.097W   |                          |
|   | No Load Power Consumption at 230VAC Input  | ≤ 0.115W   |                          |
|   | 115VAC Average Efficiency <sup>4</sup>   | ≥ 91.1%  |                          |
|   | 230VAC Average Efficiency <sup>4</sup>   | ≥ 91.3%  |                          |
|   | 230VAC 10% Load Efficiency <sup>4</sup>  | ≥ 89.5%  |                          |
|   | Leakage Current  | 0.25mA max..@254vac, 50Hz  | 3.5mA max. @254vac, 50Hz |
| Protection                                  | Over-Voltage   | 25V max., Auto-recovery  |                          |
|   | Short Circuit  | Auto-recovery  |                          |
|   | Over-Current   | 6.6A max., Auto-recovery   |                          |
|   | Over-Temperature   | Auto-recovery  |                          |
| Environmental                               | Operating Temperature <sup>5</sup>   | -10°C to +70°C   |                          |
|   | Operating Humidity   | 5% to 90% RH max   |                          |
|   | Operating Altitude   | Up to 5000m  |                          |
| Safety and EMC Standards (Designed to meet) | Dielectric Withstand (HI-POT)  | Primary to Secondary: 3000VAC or 4242Vdc for 1min, 10mA  |                          |
|   | Insulation Resistance  | Primary to Secondary: >7M ohm for 500VDC   |                          |
|   | Standards  | IEC 62368-1, UL 62368-1 3 <sup>rd</sup> Edition  |                          |
|   | EMI Emissions  | EN55032 Class B, FCC Class B, CAN ICES-003(B)/NMB-003(B) Conducted and Radiated  |                          |
|   | Harmonic Current Emissions   | IEC 61000-3-2  |                          |
|   | Immunity   | EN 55035/CISPR 35: IEC 61000-4-2 (+/- 15kV air, +/- 8kV contact), IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5 (+/- 1kV L-L, 2kV L-G), IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11 |                          |
| Mechanical                                  | Dimensions (L x W x H)   | 141.5mm (5.57in) x 62.5mm (2.46in) x 33mm (1.30in)   |                          |
|   | Cable Length   | 1200mm 16AWG   |                          |
|   | Output Connector   | 2.1mm x 5.5mm x 9.5mm barrel   |                          |
|   | Input Connector  | IEC 60320 C8   | IEC 60320 C14            |
| Notes                                       | <ol style="list-style-type: none"> <li>The specifications defined are at ambient temperature of 25°C, unless otherwise specified.</li> <li>Special order model. Minimum order quantity applies.</li> <li>20MHz bandwidth frequency oscilloscope, add a 0.1µF multilayer Cap. and Low ESR Electrolytic Cap. (10µF) at output connector terminals (nominal line voltage, full load).</li> <li>Efficiency is measured after 30 minutes burn-in.</li> <li>Refer to Operating temperature curve.</li> </ol> |  |                          |



# AA90x Series Specifications<sup>1</sup>

| Model                                       |  | AA90W-240B-R <sup>2</sup>   | AA90U-240B-R             |
|---|--|---|--------------------------|
| Output                                      | DC Output Voltage  | 24.0V   |                          |
|   | Max Current  | 3.75A   |                          |
|   | Output Power   | 90.0W   |                          |
|   | Regulation   | ± 5%  |                          |
|   | Ripple & Noise P-P(max) <sup>3</sup>   | 240mV   |                          |
| Input                                       | AC Input Voltage Range   | 90 to 264VAC  |                          |
|   | AC Input Voltage Rating  | 100 VAC to 240VAC   |                          |
|   | AC Input Frequency   | 47 to 63Hz  |                          |
|   | Inrush Current   | 200A @ 240VAC max Load  |                          |
|   | Power Factor   | >0.95 @ 120 VAC; >0.90 @ 240 VAC Full Load                                      |                          |
|   | No Load Power Consumption at 115VAC Input  | ≤ 0.115W  |                          |
|   | No Load Power Consumption at 230VAC Input  | ≤ 0.124W  |                          |
|   | 115VAC Average Efficiency <sup>4</sup>   | ≥ 91.7%   |                          |
|   | 230VAC Average Efficiency <sup>4</sup>   | ≥ 91.9%   |                          |
|   | 230VAC 10% Load Efficiency <sup>4</sup>  | ≥ 89.6%   |                          |
|   | Leakage Current  | 0.25mA max. @254vac, 50Hz   | 3.5mA max. @254vac, 50Hz |
| Protection                                  | Over-Voltage   | 35V max., Auto-recovery   |                          |
|   | Short Circuit  | Auto-recovery   |                          |
|   | Over-Current   | 5.3A max., Auto-recovery  |                          |
|   | Over-Temperature   | Auto-recovery   |                          |
| Environmental                               | Operating Temperature <sup>5</sup>   | -10°C to +70°C  |                          |
|   | Operating Humidity   | 5% to 90% RH max  |                          |
|   | Operating Altitude   | Up to 5000m   |                          |
| Safety and EMC Standards (Designed to meet) | Dielectric Withstand (HI-POT)  | Primary to Secondary: 3000VAC or 4242Vdc for 1min, 10mA                         |                          |
|   | Insulation Resistance  | Primary to Secondary: >7M ohm for 500VDC  |                          |
|   | Standards  | IEC 62368-1, UL 62368-1 3 <sup>rd</sup> Edition                                 |                          |
|   | EMI Emissions  | EN55032 Class B, FCC Class B, CAN ICES-003(B)/NMB-003(B) Conducted and Radiated |                          |
|   | Harmonic Current Emissions   | IEC 61000-3-2   |                          |
| Mechanical                                  | Dimensions (L x W x H)   | 141.5mm (5.57in) x 62.5mm (2.46in) x 33mm (1.30in)                              |                          |
|   | Cable Length   | 1500mm 18AWG  |                          |
|   | Output Connector   | 2.1mm x 5.5mm x 9.5mm barrel  |                          |
|   | Input Connector  | IEC 60320 C8  | IEC 60320 C14            |
| Notes                                       | <ol style="list-style-type: none"> <li>The specifications defined are at ambient temperature of 25°C, unless otherwise specified.</li> <li>Special order model. Minimum order quantity applies.</li> <li>20MHz bandwidth frequency oscilloscope, add a 0.1µF multilayer Cap. and Low ESR Electrolytic Cap. (10µF) at output connector terminals (nominal line voltage, full load).</li> <li>Efficiency is measured after 30 minutes burn-in.</li> <li>Refer to Operating temperature curve.</li> </ol> |   |                          |



# AA90x Series Specifications<sup>1</sup>

| Model                                       |  | AA90W-480B-R <sup>2</sup>   | AA90U-480B-R             |
|---|--|---|--------------------------|
| Output                                      | DC Output Voltage  | 48.0V   |                          |
|   | Max Current  | 1.875A  |                          |
|   | Output Power   | 90.0W   |                          |
|   | Regulation   | ± 5%  |                          |
|   | Ripple & Noise P-P(max) <sup>3</sup>   | 480mV   |                          |
| Input                                       | AC Input Voltage Range   | 90 to 264VAC  |                          |
|   | AC Input Voltage Rating  | 100 VAC to 240VAC   |                          |
|   | AC Input Frequency   | 47 to 63Hz  |                          |
|   | Inrush Current   | 200A @ 240VAC max Load  |                          |
|   | Power Factor   | >0.95 @ 120 VAC; >0.90 @ 240 VAC Full Load                                      |                          |
|   | No Load Power Consumption at 115VAC Input  | ≤ 0.125W  |                          |
|   | No Load Power Consumption at 230VAC Input  | ≤ 0.137W  |                          |
|   | 115VAC Average Efficiency <sup>4</sup>   | ≥ 91.5%   |                          |
|   | 230VAC Average Efficiency <sup>4</sup>   | ≥ 91.8%   |                          |
|   | 230VAC 10% Load Efficiency <sup>4</sup>  | ≥ 88.8%   |                          |
|   | Leakage Current  | 0.25mA max. @254vac, 50Hz   | 3.5mA max. @254vac, 50Hz |
| Protection                                  | Over-Voltage   | 60V max., Auto-recovery   |                          |
|   | Short Circuit  | Auto-recovery   |                          |
|   | Over-Current   | 2.7A max., Auto-recovery  |                          |
|   | Over-Temperature   | Auto-recovery   |                          |
| Environmental                               | Operating Temperature <sup>5</sup>   | -10°C to +70°C  |                          |
|   | Operating Humidity   | 5% to 90% RH max  |                          |
|   | Operating Altitude   | Up to 5000m   |                          |
| Safety and EMC Standards (Designed to meet) | Dielectric Withstand (HI-POT)  | Primary to Secondary: 3000VAC or 4242Vdc for 1min, 10mA                         |                          |
|   | Insulation Resistance  | Primary to Secondary: >7M ohm for 500VDC  |                          |
|   | Standards  | IEC 62368-1, UL 62368-1 3 <sup>rd</sup> Edition                                 |                          |
|   | EMI Emissions  | EN55032 Class B, FCC Class B, CAN ICES-003(B)/NMB-003(B) Conducted and Radiated |                          |
|   | Harmonic Current Emissions   | IEC 61000-3-2   |                          |
| Mechanical                                  | Dimensions (L x W x H)   | 141.5mm (5.57in) x 62.5mm (2.46in) x 33mm (1.30in)                              |                          |
|   | Cable Length   | 1500mm AWG  |                          |
|   | Output Connector   | 2.1mm x 5.5mm x 9.5mm barrel  |                          |
|   | Input Connector  | IEC 60320 C8  | IEC 60320 C14            |
| Notes                                       | <ol style="list-style-type: none"> <li>The specifications defined are at ambient temperature of 25°C, unless otherwise specified.</li> <li>Special order model. Minimum order quantity applies.</li> <li>20MHz bandwidth frequency oscilloscope, add a 0.1µF multilayer Cap. and Low ESR Electrolytic Cap. (10µF) at output connector terminals (nominal line voltage, full load).</li> <li>Efficiency is measured after 30 minutes burn-in.</li> <li>Refer to Operating temperature curve.</li> </ol> |   |                          |

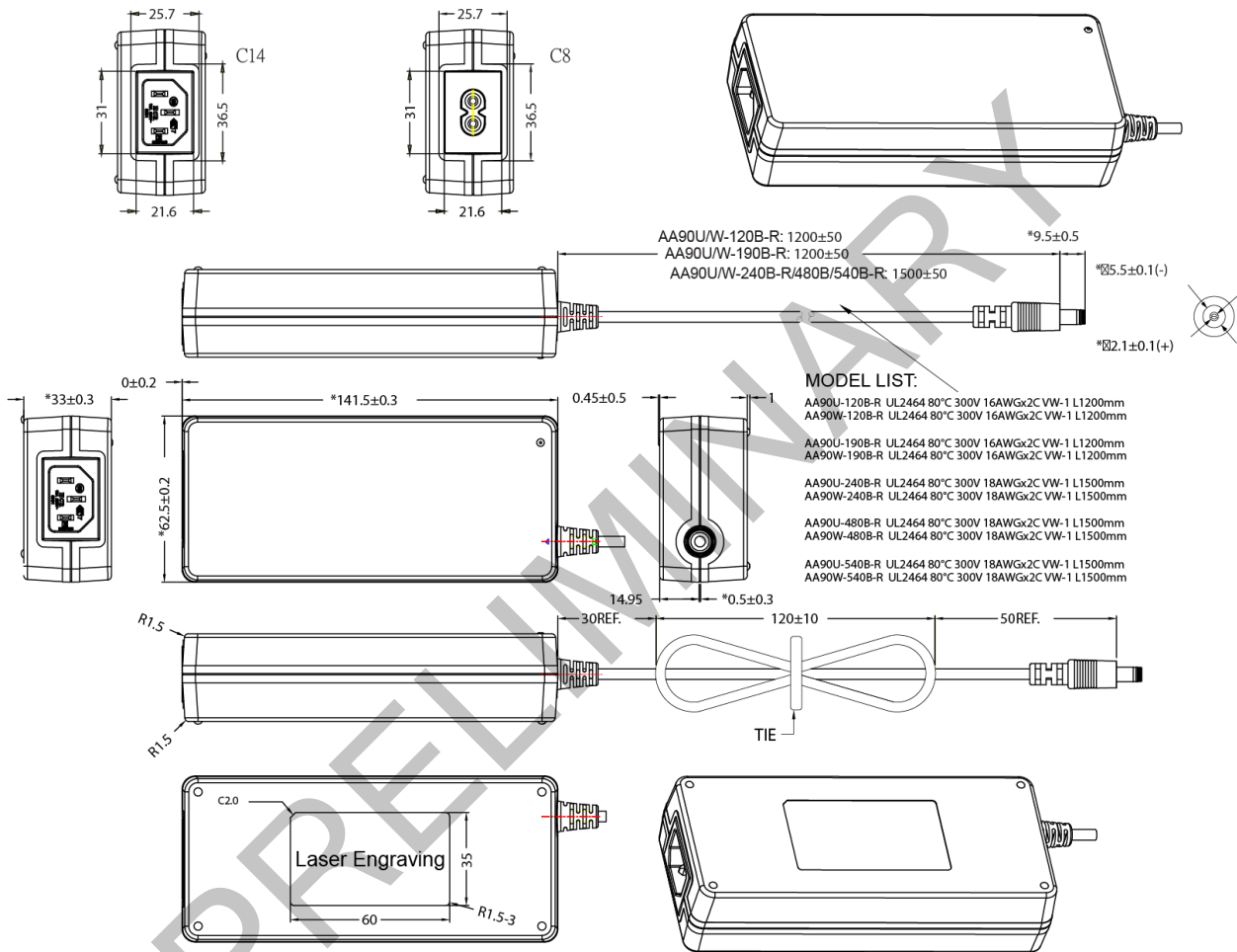


# AA90x Series Specifications<sup>1</sup>

| Model                                       |  | AA90W-540B-R <sup>2</sup>   | AA90U-540B-R             |
|---|--|---|--------------------------|
| Output                                      | DC Output Voltage  | 54.0V   |                          |
|   | Max Current  | 1.67A   |                          |
|   | Output Power   | 90.18W  |                          |
|   | Regulation   | ± 5%  |                          |
|   | Ripple & Noise P-P(max) <sup>3</sup>   | 540mV   |                          |
| Input                                       | AC Input Voltage Range   | 90 to 264VAC  |                          |
|   | AC Input Voltage Rating  | 100 VAC to 240VAC   |                          |
|   | AC Input Frequency   | 47 to 63Hz  |                          |
|   | Inrush Current   | 200A @ 240VAC max Load  |                          |
|   | Power Factor   | >0.95 @ 120 VAC; >0.90 @ 240 VAC Full Load                                      |                          |
|   | No Load Power Consumption at 115VAC Input  | ≤ 0.150W  |                          |
|   | No Load Power Consumption at 230VAC Input  | ≤ 0.142W  |                          |
|   | 115VAC Average Efficiency <sup>4</sup>   | ≥ 91.8%   |                          |
|   | 230VAC Average Efficiency <sup>4</sup>   | ≥ 91.9%   |                          |
|   | 230VAC 10% Load Efficiency <sup>4</sup>  | ≥ 88.3%   |                          |
|   | Leakage Current  | 0.25mA max. @254vac, 50Hz   | 3.5mA max. @254vac, 50Hz |
| Protection                                  | Over-Voltage   | 60V max., Auto-recovery   |                          |
|   | Short Circuit  | Auto-recovery   |                          |
|   | Over-Current   | 2.4A max., Auto-recovery  |                          |
|   | Over-Temperature   | Auto-recovery   |                          |
| Environmental                               | Operating Temperature <sup>5</sup>   | -10°C to +70°C  |                          |
|   | Operating Humidity   | 5% to 90% RH max  |                          |
|   | Operating Altitude   | Up to 5000m   |                          |
| Safety and EMC Standards (Designed to meet) | Dielectric Withstand (HI-POT)  | Primary to Secondary: 3000VAC or 4242Vdc for 1min, 10mA                         |                          |
|   | Insulation Resistance  | Primary to Secondary: >7M ohm for 500VDC  |                          |
|   | Standards  | IEC 62368-1, UL 62368-1 3 <sup>rd</sup> Edition                                 |                          |
|   | EMI Emissions  | EN55032 Class B, FCC Class B, CAN ICES-003(B)/NMB-003(B) Conducted and Radiated |                          |
|   | Harmonic Current Emissions   | IEC 61000-3-2   |                          |
| Mechanical                                  | Dimensions (L x W x H)   | 141.5mm (5.57in) x 62.5mm (2.46in) x 33mm (1.30in)                              |                          |
|   | Cable Length   | 1500mm AWG  |                          |
|   | Output Connector   | 2.1mm x 5.5mm x 9.5mm barrel  |                          |
|   | Input Connector  | IEC 60320 C8  | IEC 60320 C14            |
| Notes                                       | <ol style="list-style-type: none"> <li>The specifications defined are at ambient temperature of 25°C, unless otherwise specified.</li> <li>Special order model. Minimum quantity order applies.</li> <li>20MHz bandwidth frequency oscilloscope, add a 0.1µF multilayer Cap. and Low ESR Electrolytic Cap. (10µF) at output connector terminals (nominal line voltage, full load).</li> <li>Efficiency is measured after 30 minutes burn-in.</li> <li>Refer to Operating temperature curve.</li> </ol> |   |                          |



# AA90U and AA90W Series Outline Drawing: mm



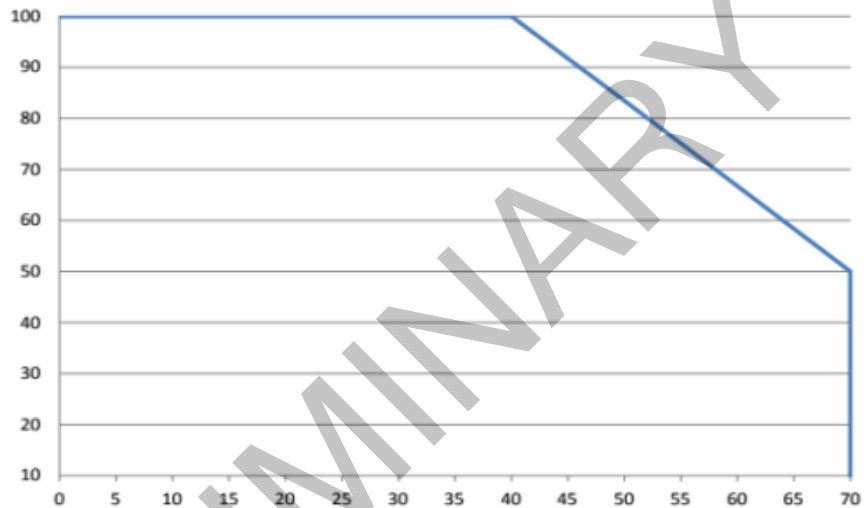


# AA90U and AA90W Series Operating Temperature Curve

Operating temperature:

-10°C to 40°C

(100% load at +40°C, 80% load at +50°C, 50% load at +70°C)



PRELIMINARY





**Supplier's Declaration of Conformity**  
**47 CFR § 2.1077 Compliance Information**

MODELS

AA90W-120B-R, AA90U-120B-R,  
AA90W-190B-R, AA90U-120B-R,  
AA90W-240B-R, AA90U-240B-R,  
AA90W-480B-R, AA90U-480B-R,  
AA90U-540B-R, AA90U-540B-R

Phihong USA Corporation

47800 Fremont Boulevard

Fremont, CA 94538

Telephone: (510) 445-0100

[www.phihong.com](http://www.phihong.com)

*This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.*

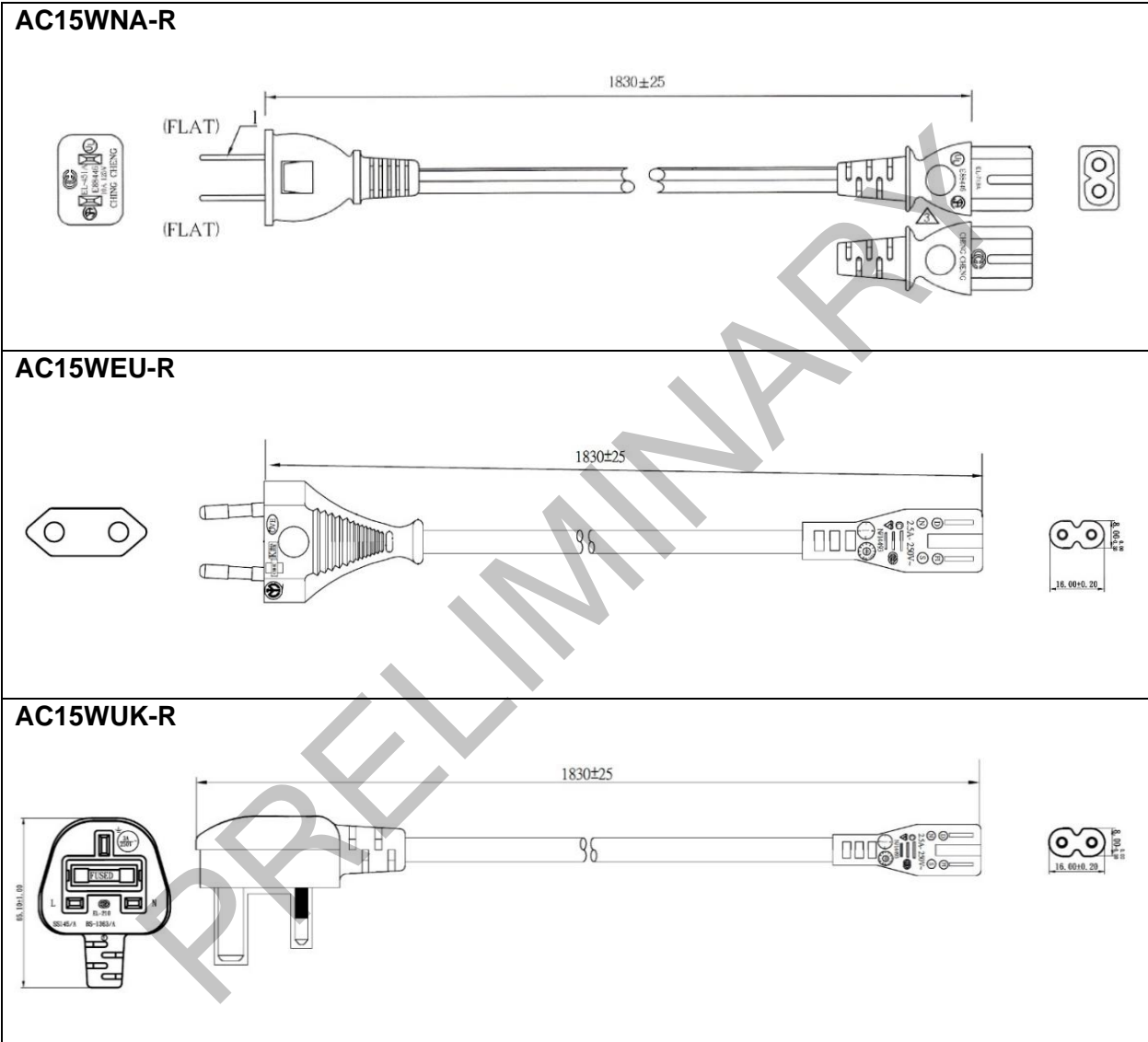


# AA90W Series Line Cords Sold Separately

| Model            |                 | AC15WNA-R                   | AC15WEU-R  | AC15WUK-R                 |
|------------------|-----------------|-----------------------------|--|---------------------------|
| Specifications   | Plug Type       | North America<br>NEMA 1-15P | Continental Europe<br>CEE 7XVI   | United Kingdom<br>BS 1363 |
|                  | Connector       | IEC320 C7                   | IEC320 C7  | IEC320 C7                 |
|                  | Wire Size       | 18 AWG                      | 0.75mm   | 0.75mm                    |
|                  | Temperature     | 60°C                        | 60°C   | 60 °C                     |
|                  | Amperage Rating | 7A                          | 2.5A   | 2.5A                      |
|                  | Voltage Rating  | 125V                        | 250V   | 250V                      |
|                  | Cable Length    | 1830mm                      | 1830mm   | 1830mm                    |
| Safety Approvals |                 | CSA; UL                     | CEBEC; DEMKO; DVE;<br>FIMKO; GOST; IMQ;<br>KEMA; NEMKO; NF;<br>OVE; SEMKO; SEV | BSI; Safety Mark          |
| Photos           |                 |                             |  |                           |



# AA90W Series Line Cords Outline Drawings





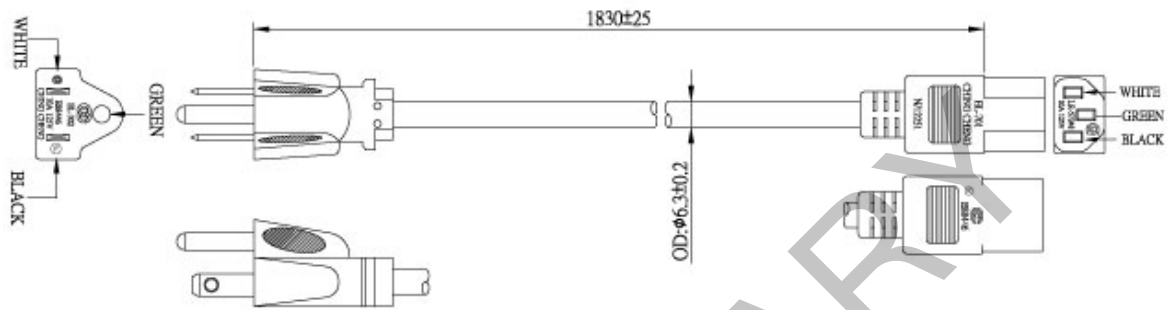
# AA90U Series Line Cords Sold Separately

| Model            |                 | AC30UNA-R   | AC30UEU-R  | AC30UUK-R   |
|------------------|-----------------|---|--|---|
| Specifications   | Plug Type       | North America<br>NEMA 5-15P   | Continental Europe<br>CEE 7VIII  | United Kingdom<br>BS 1363   |
|                  | Connector       | IEC320 C13  | IEC320 C13   | IEC320 C13  |
|                  | Wire Size       | 18 AWG  | 0.75mm   | 1.0mm   |
|                  | Temperature     | 60°C  | 60°C   | 70 °C   |
|                  | Amperage Rating | 10A   | 6A   | 10A   |
|                  | Voltage Rating  | 125V  | 250V   | 250V  |
|                  | Cable Length    | 1830mm  | 1830mm   | 2500mm  |
| Safety Approvals |                 | CSA; UL   | CEBEC; DEMKO;<br>DVE; FIMKO; GOST;<br>IMQ; KEMA;<br>NEMKO; NF; OVE;<br>SEMKO         | BSI; Safety Mark  |
| Photos           |                 |  |  |  |

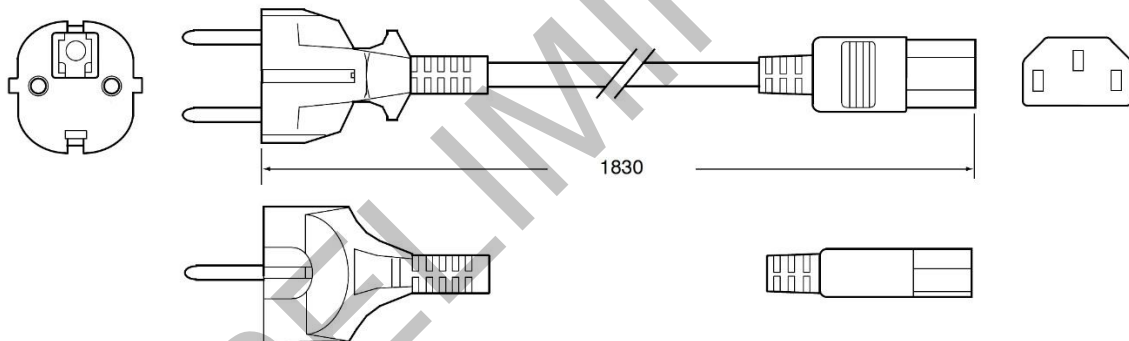


# AA90U Series Line Cords Outline Drawings

**AC30UNA-R**



**AC30UEU-R**



**AC30UUK-R**

