



FEATURES:50

- Efficiency up to 90%
- Ultra-wide 4:1 Input range
- No-load consumption $\leq 0.15W$
- Over Current protection
- Input under voltage lockout
- On/Off Remote Control
- Over Voltage Protection
- I/Output Isolation 1500, 2250 & 3000VDC
- Operating Temperature: $-40^{\circ}C$ to $+85^{\circ}C$
- Continuous Short Circuit protection

Models
Single output



| Model | Input Voltage (V) | Max Input Current Full/No load (mA) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Max Capacitive Load (uF) | Efficiency (%) |
|---------------------|-------------------|-------------------------------------|--------------------|-------------------------|-----------------|--------------------------|----------------|
| AM20EW-2403S-NZ | 9-36 | 818/45 | 3.3 | 5000 | 1500 | 10000 | 86 |
| AM20EW-2405S-NZ | 9-36 | 993/45 | 5 | 4000 | 1500 | 10000 | 90 |
| AM20EW-2409S-NZ | 9-36 | 941/10 | 9 | 2222 | 1500 | 4700 | 89 |
| AM20EW-2412S-NZ | 9-36 | 941/10 | 12 | 1667 | 1500 | 1600 | 89 |
| AM20EW-2415S-NZ | 9-36 | 941/10 | 15 | 1333 | 1500 | 1000 | 90 |
| AM20EW-2424S-NZ | 9-36 | 941/10 | 24 | 834 | 1500 | 500 | 90 |
| AM20EW-4803S-NZ | 18-75 | 409/25 | 3.3 | 5000 | 1500 | 10000 | 86 |
| AM20EW-4805S-NZ | 18-75 | 497/25 | 5 | 4000 | 1500 | 10000 | 90 |
| AM20EW-4809S-NZ | 18-75 | 485/9 | 9 | 2222 | 1500 | 4700 | 89 |
| AM20EW-4812S-NZ | 18-75 | 485/9 | 12 | 1667 | 1500 | 1600 | 89 |
| AM20EW-4815S-NZ | 18-75 | 485/9 | 15 | 1333 | 1500 | 1000 | 90 |
| AM20EW-4824S-NZ | 18-75 | 485/9 | 24 | 834 | 1500 | 500 | 90 |
| AM20EW-11005S-NZ * | 40-160 | 212/20 | 5 | 4000 | 1500 | 4020 | 89 |
| AM20EW-11012S-NZ * | 40-160 | 212/20 | 12 | 1667 | 1500 | 1600 | 88 |
| AM20EW-11015S-NZ * | 40-160 | 212/20 | 15 | 1333 | 1500 | 1000 | 88 |
| AM20EW-11024S-NZ * | 40-160 | 212/20 | 24 | 833 | 1500 | 470 | 88 |
| AM20EW-11003SH22-NZ | 40-160 | 188/20 | 3.3 | 5000 | 2250 | 10000 | 82 |
| AM20EW-11005SH22-NZ | 40-160 | 222/20 | 5 | 4000 | 2250 | 10000 | 84 |
| AM20EW-11012SH22-NZ | 40-160 | 219/8 | 12 | 1667 | 2250 | 1600 | 85 |
| AM20EW-11015SH22-NZ | 40-160 | 219/8 | 15 | 1333 | 2250 | 1000 | 86 |
| AM20EW-11024SH22-NZ | 40-160 | 219/8 | 24 | 833 | 2250 | 470 | 86 |
| AM20EW-2403SH30-NZ | 9-36 | 818/45 | 3.3 | 5000 | 3000 | 10000 | 86 |
| AM20EW-2405SH30-NZ | 9-36 | 958/45 | 5 | 4000 | 3000 | 10000 | 89 |
| AM20EW-2409SH30-NZ | 9-36 | 967/12 | 9 | 2222 | 3000 | 4700 | 88 |
| AM20EW-2412SH30-NZ | 9-36 | 967/12 | 12 | 1667 | 3000 | 1600 | 88 |
| AM20EW-2415SH30-NZ | 9-36 | 967/12 | 15 | 1333 | 3000 | 1000 | 89 |
| AM20EW-2424SH30-NZ | 9-36 | 967/12 | 24 | 834 | 3000 | 500 | 89 |
| AM20EW-4803SH30-NZ | 18-75 | 409/25 | 3.3 | 5000 | 3000 | 10000 | 86 |
| AM20EW-4805SH30-NZ | 18-75 | 484/25 | 5 | 4000 | 3000 | 10000 | 88 |
| AM20EW-4812SH30-NZ | 18-75 | 484/8 | 12 | 1667 | 3000 | 1600 | 88 |
| AM20EW-4815SH30-NZ | 18-75 | 484/8 | 15 | 1333 | 3000 | 1000 | 89 |
| AM20EW-4824SH30-NZ | 18-75 | 484/8 | 24 | 834 | 3000 | 500 | 89 |

Models
Dual output

| Model | Input Voltage (V) | Max Input current Full/No load (mA) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Max Capacitive Load(uF) | Efficiency (Typ.) (%) |
|-----------------|-------------------|-------------------------------------|--------------------|-------------------------|-----------------|-------------------------|-----------------------|
| AM20EW-2405D-NZ | 9-36 | 993/45 | ± 5 | ± 2000 | 1500 | ± 4800 | 86 |
| AM20EW-2409D-NZ | 9-36 | 941/10 | ± 9 | ± 1111 | 1500 | ± 1000 | 88 |
| AM20EW-2412D-NZ | 9-36 | 941/10 | ± 12 | ± 834 | 1500 | ± 800 | 88 |
| AM20EW-2415D-NZ | 9-36 | 941/10 | ± 15 | ± 667 | 1500 | ± 625 | 88 |
| AM20EW-4805D-NZ | 18-75 | 497/25 | ± 5 | ± 2000 | 1500 | ± 4800 | 86 |
| AM20EW-4812D-NZ | 18-75 | 485/9 | ± 12 | ± 834 | 1500 | ± 800 | 88 |

| | | | | | | | |
|---------------------|--------|-------|-----|------|------|------|----|
| AM20EW-4815D-NZ | 18-75 | 485/9 | ±15 | ±667 | 1500 | ±625 | 89 |
| AM20EW-11012DH30-NZ | 40-160 | 217/8 | ±12 | ±833 | 3000 | ±680 | 85 |
| AM20EW-11015DH30-NZ | 40-160 | 217/8 | ±15 | ±667 | 3000 | ±470 | 86 |
| AM20EW-11024DH30-NZ | 40-160 | 217/8 | ±24 | ±417 | 3000 | ±220 | 86 |

Add suffix “-K” for optional heatsink for metal cased models only.

*Add suffix “-ST” for optional screw terminal bottom plate or “-STD” for optional DIN Rail screw terminal bottom plate and reverse voltage protection.

**Add suffix “-K-ST” for optional heatsink and screw terminal bottom plate(for metal cased models only) or “-K-STD” for optional heatsink and DIN Rail screw terminal bottom plate and reverse voltage protection(for metal cased models only).

*** For models marked with * are not recommended for the new design, also the optional "-K", "-ST", "-STD", "-K-ST" or "-K-STD" package have been obsoleted.

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Input Specifications

| Parameters | Nominal | Typical | Maximum | Units |
|-----------------------------|--|---------|----------|-------|
| Voltage range | 24 | 9-36 | | VDC |
| | 48 | 18-75 | | |
| | 110 | 40-160 | | |
| Filter | π(Pi) Network | | | |
| Startup time | | 10 | | ms |
| Absolute Maximum Rating | 24 | | -0.7-50 | VDC |
| | 48 | | -0.7-100 | |
| | 110 | | -0.7-180 | |
| Peak Input Voltage time | | | 1 | s |
| On/Off control | ON – open or 3.5-12VDC ; OFF – short to -Vin or 0-1.2VDC, Idle current: 110Vin 1500 isolated models - 1mA; Others - 2~7mA | | | |
| Input under voltage lockout | 24 | | 5.5-6.5 | VDC |
| | 48 | | 14-15.5 | |
| Input reflected current | 110V, 2250V & 3000V Isolation | | 28-33 | mA |
| | | 30 | | |

Isolation Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|----------------------------|--|-------------------|---------|-------|
| Tested I/O voltage | 60 sec, 1mA | 1500, 2250 & 3000 | | VDC |
| Tested I/FG & O/FG voltage | 2250V Isolation models only, 60 sec, 1mA | 1600 | | VDC |
| | 110Vin 3000V isolation models only, 60sec, 1mA | 1500 | | |
| Resistance | 500VDC I/O Isolation | >1000 | | MOhm |
| Capacitance | All 1500VDC Isolation models 100KHz/0.1V | 2000 | | pF |
| | 110Vin 2250V & 3000V Isolation, I/O, 100KHz/0.1V | 2200 | | |
| | 24/48Vin 3000VDC Isolation models 100KHz/0.1V | 500 | | |

Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|----------------------------------|---|---------|---------|----------|
| Voltage accuracy | 110Vin, 3000V isolation, positive output | ±1 | ±2 | % |
| | Others | ±1 | ±3 | |
| Balanced load | | ±0.5 | ±1.5 | % |
| Over voltage protection | Zener Diode Clamp | 110 | 160 | % |
| Over current protection | | 120 | 210 | % of Io |
| Short Circuit protection | Continuous, hiccup | | | |
| Short circuit restart | Auto-Recovery | | | |
| Line voltage regulation (single) | Full load, LL-HL | ±0.2 | ±0.5 | % of Vin |
| Line voltage regulation (dual) | 110Vin, 3000V isolation, positive output | ±0.2 | ±0.5 | % of Vin |
| | Full load, LL-HL | ±0.5 | ±1 | |
| Load voltage regulation (single) | 5% to 100% load for 1500VDC models & 0% to 100% load for others | ±0.5 | ±1 | % |
| Load voltage regulation (dual) | 110Vin, 3000V isolation, positive output | ±0.5 | ±1 | % |
| | 5% to 100% load | ±0.5 | ±1.5 | |
| Cross regulation | 50% 1 st load, 10-100% 2 nd load | | ±5 | % |

| | | | | |
|------------------------------|---|----|-------|--------|
| Temperature coefficient | | | ±0.03 | %/°C |
| Ripple & Noise | 20MHz Bandwidth, 5% to 100% load | | 100 | mV p-p |
| Voltage adjustment range | | | ±10 | % |
| Transient recovery time | 25% load step change, 2250V/3000V isolation | | 500 | µS |
| | 25% load step change, others | | 800 | |
| Transient recovery deviation | 25% load step change: 3.3, 5, ±5Vout | ±5 | ±8 | % |
| | 25% load step change: others | ±3 | ±5 | |

General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|-------------------------------|---|--|---------|-------|
| Switching frequency | 100% load, 24 & 48 Vin 100% load, 110Vin | 270 300 | | KHz |
| Operating temperature | See derating curve | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Maximum case temperature | | | 105 | °C |
| Cooling | | Free air convection | | |
| Humidity | | | 95 | % RH |
| Case material | 24/48Vin, 3000VDC models Other models | Plastic (UL94-V0) Aluminum Alloy | | |
| Dimensions (L x W x H) | Aluminium case Plastic case Optional packages | 2 x 1 x 0.47 inches 50.8 x 25.4 x 11.8 mm 2.03 x 1.04 x 0.47 inches 51.5 x 26.5 x 12 mm See dimensions drawing | | |
| Weight | Pin mountable without heatsink | 28 (110Vin, 1500VDC Isolated models) 26 (Other metal case models) 24 (3000VDC Isolated models) | | g |
| | Pin mountable with heatsink | 36 (110Vin, 1500VDC Isolated models) 34 (Other metal case models) 32 (3000VDC Isolated models) | | |
| | -ST option without heatsink | 50 (110Vin, 1500VDC Isolated models) 48 (Other metal case models) 46 (3000VDC Isolated models) | | |
| | -ST option with heatsink | 58 (110Vin, 1500VDC Isolated models) 56 (Other metal case models) 54 (3000VDC Isolated models) | | |
| | -STD option without heatsink | 70 (110Vin, 1500VDC Isolated models) 68 (Other metal case models) 66 (3000VDC Isolated models) | | |
| | -STD option with heatsink | 78 (110Vin, 1500VDC Isolated models) 76 (Other metal case models) 74 (3000VDC Isolated models) | | |
| MTBF | >1,000,000 hours (MIL-HDBK -217F, Ground Benign, t=+25°C) | | | |
| Maximum soldering temperature | 1.5mm from case for 10 sec | | 300 | °C |

Environment Specification

| Test | Parameters | Conditions |
|---------------------------------------|----------------------------|-------------------------------|
| Vibration | Test mode | 10-55Hz |
| | Acceleration | 10g, 30min, every axis tested |
| Vibration (110 Vin/2250VDC isolation) | IEC61373 car body 1 B mold | |

Safety Specifications

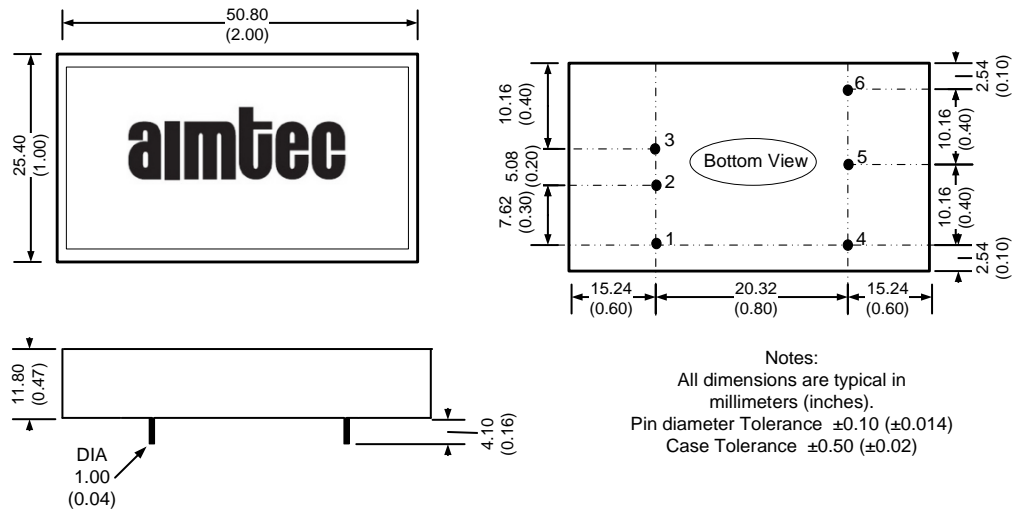
| Parameters | |
|------------------|--|
| Agency approvals | cULus (with exception of 110Vin models), CE (110Vin models only) |
| Standards | EN 55032, Class B, with EMC recommended circuit EN 50121-3-2, 150kHz-500kHz 99dBuV, 30MHz-230MHz 40dBuV/m at 10m (110Vin, 2250VDC models approved with recommended circuit) (24/48Vin, 1500VDC & 110Vin, 3000 VDC models meet with recommended circuit) EN 55016-2-1, 500kHz-30MHz 93dBuV, 230MHz-1GHz 47dBuV/m at 10m (110Vin, 2250VDC models approved with recommended circuit) (24/48Vin, 1500VDC & 110Vin, 3000 VDC models meet with recommended circuit) Information technology Equipment IEC/UL 60950-1 |

| | |
|---|--|
| Railway application | EN50155 (110Vin, 2250VDC models approved) (24/48Vin, 1500VDC and 110Vin, 3000 VDC models meet) |
| Electrostatic Discharge Immunity | IEC 61000-4-2, Contact ± 6 KV (110Vin 2250/3000VDC Isolation), Contact ± 4 KV (Others), Criteria B EN50121-3-2, Contact ± 6 KV/Air ± 8 KV(24/48Vin 1500VDC and 110Vin 2250/3000VDC Isolation), Criteria B |
| RF, Electromagnetic Field Immunity | IEC 61000-4-3, 20V/m(110Vin 3000VDC isolation), 10V/m(Others), Criteria A EN50121-3-2, 20V/m (24/48Vin 1500VDC & 110Vin 2250/3000VDC Isolation), Criteria A |
| Electrical Fast Transient / Burst Immunity | IEC 61000-4-4, ± 4 KV (110Vin 2250/3000 VDC Isolation), ± 2 KV (Others), Criteria B, with external filter EN50121-3-2, ± 2 KV (24/48Vin 1500VDC & 110Vin 2250/3000VDC Isolation), Criteria A |
| Surge Immunity | IEC 61000-4-5, ± 2 KV, Criteria B, with external filter EN50121-3-2, L-L ± 1 KV (24/48Vin 1500VDC & 110Vin 2250/3000VDC Isolation), Criteria B |
| RF, Conducted Disturbance Immunity | IEC 61000-4-6, 10 Vrms (2250/3000 VDC Isolated models), 3Vrms (Others), Criteria A EN50121-3-2, 0.15MHz ~ 80MHz, 10 Vrms (24/48Vin 1500VDC & 110Vin 2250/3000VDC Isolation), Criteria B |
| Voltage dips, Short Interruptions & Voltage variations Immunity | IEC 61000-4-29, 0-70%, Criteria B |

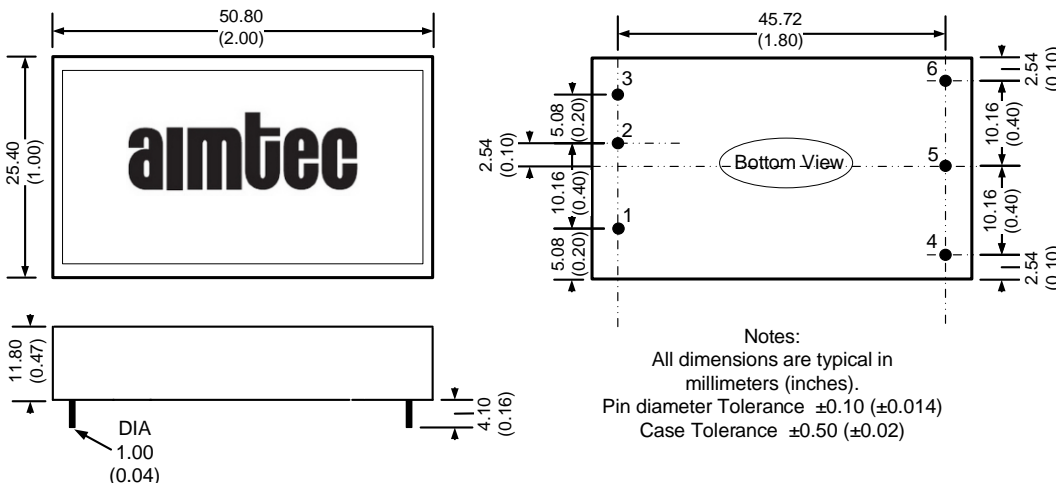
Pin Out Specifications

| Pin | Single | Dual |
|-----|----------------|----------------|
| 1 | On/Off Control | On/Off Control |
| 2 | -Vin | -Vin |
| 3 | +Vin | +Vin |
| 4 | -Vout | -Vout |
| 5 | Trim | Common |
| 6 | +Vout | +Vout |

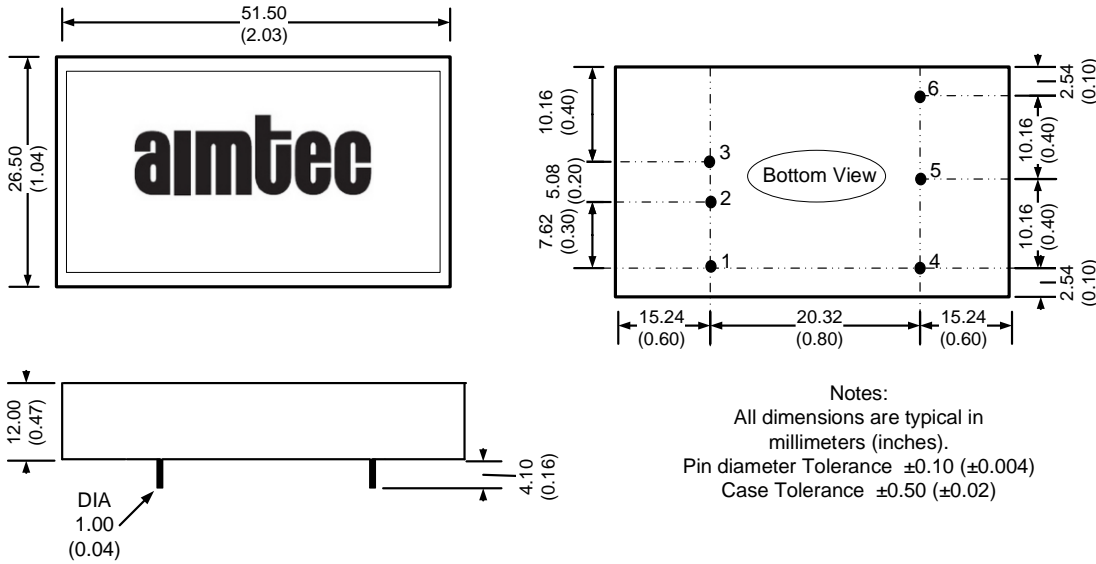
Dimensions metal case



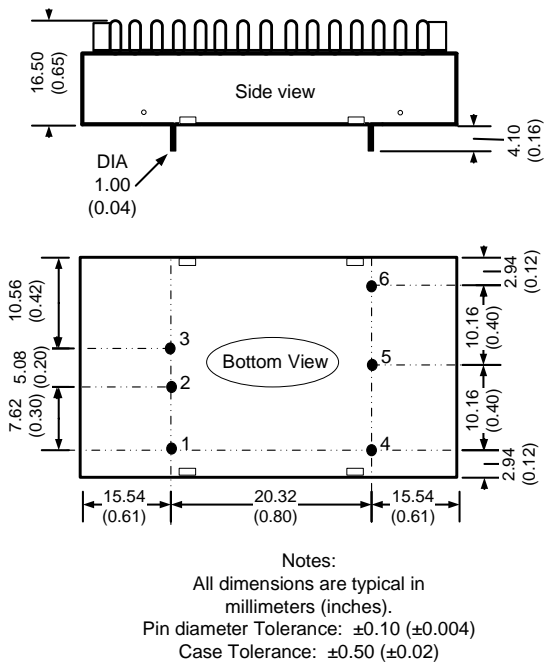
Dimensions metal case for 110Vin 3000V isolation dual output models



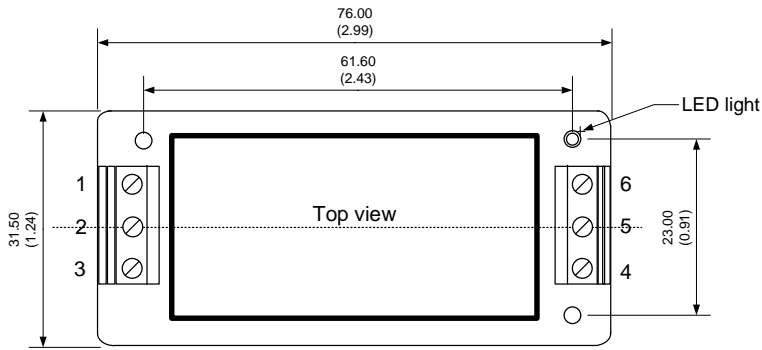
Dimensions plastic case



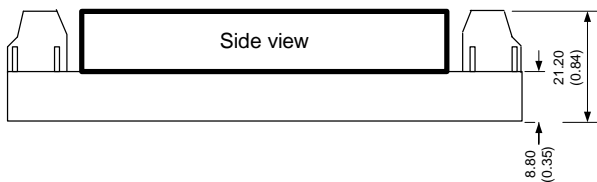
Optional -K heatsink



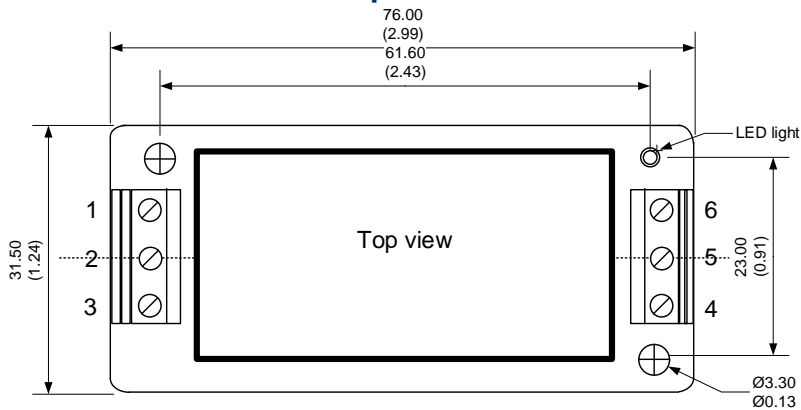
Dimensions with -ST options



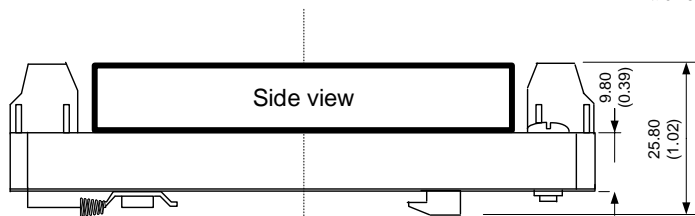
Dimensions: mm (inch)
Case Tolerance: ± 0.50 (0.02)
Wire gauge: 24-12AWG



Dimensions with -STD options



Dimensions: mm (inch)
Case Tolerance: ± 1.00 (0.04)
Wire gauge: 24-12AWG



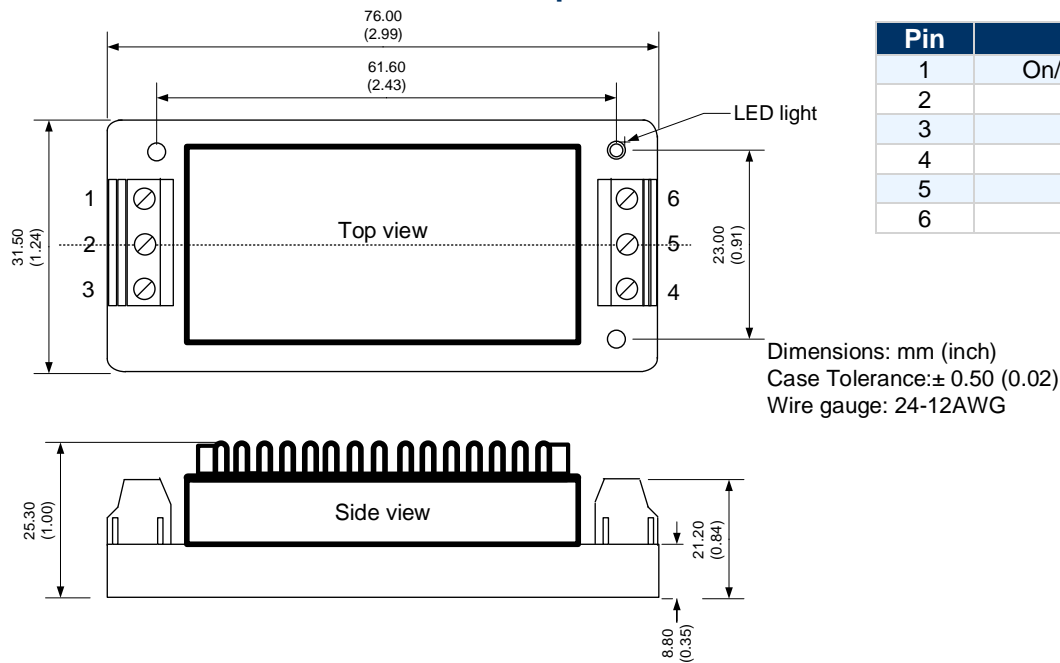
Pin Out Specifications

| Pin | Single | Single |
|-----|----------------|----------------|
| 1 | On/Off Control | On/Off Control |
| 2 | -Vin | -Vin |
| 3 | +Vin | +Vin |
| 4 | + Vout | + Vout |
| 5 | Trim | Common |
| 6 | - Vout | - Vout |

Pin Out Specifications

| Pin | Single | Single |
|-----|----------------|----------------|
| 1 | On/Off Control | On/Off Control |
| 2 | -Vin | -Vin |
| 3 | +Vin | +Vin |
| 4 | + Vout | + Vout |
| 5 | Trim | Common |
| 6 | - Vout | - Vout |

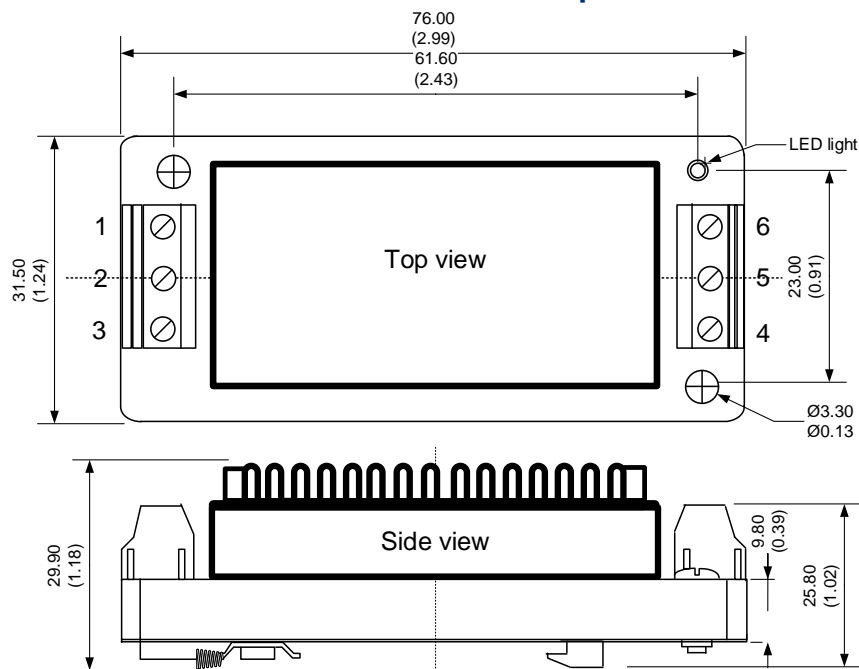
Dimensions with heatsink and -ST options



Pin Out Specifications

| Pin | Single | Single |
|-----|----------------|----------------|
| 1 | On/Off Control | On/Off Control |
| 2 | -Vin | -Vin |
| 3 | +Vin | +Vin |
| 4 | +Vout | +Vout |
| 5 | Trim | Common |
| 6 | -Vout | -Vout |

Dimensions with heatsink and -STD options



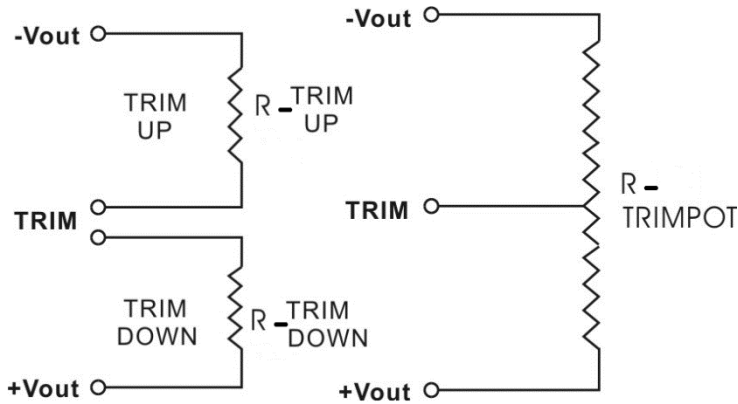
Pin Out Specifications

| Pin | Single | Single |
|-----|----------------|----------------|
| 1 | On/Off Control | On/Off Control |
| 2 | -Vin | -Vin |
| 3 | +Vin | +Vin |
| 4 | +Vout | +Vout |
| 5 | Trim | Common |
| 6 | -Vout | -Vout |

Trimming

Output voltage can be externally trimmed by utilizing the methods as shown below

Fixed Resistor Variable Potentiometer



Leave open if not used.

AM20EW-xx03S-NZ, xx=24 or 48

| | | | | | | | | | | |
|-----------------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|-------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 3.27 | 3.23 | 3.2 | 3.17 | 3.14 | 3.1 | 3.07 | 3.04 | 3 | 2.97 |
| Rt down (K Ω) | 124.138 | 73.217 | 53.983 | 41.497 | 32.737 | 24.449 | 19.839 | 16.148 | 12.236 | 9.856 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 3.33 | 3.37 | 3.4 | 3.43 | 3.47 | 3.5 | 3.53 | 3.56 | 3.6 | 3.63 |
| Rt up (K Ω) | -556.59 | 194.738 | 89.364 | 55.050 | 34.131 | 25.350 | 19.357 | 15.006 | 10.773 | 8.367 |

AM20EW-11003SH22-NZ

| | | | | | | | | | | |
|-----------------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 3.267 | 3.234 | 3.201 | 3.168 | 3.135 | 3.102 | 3.069 | 3.036 | 3.003 | 2.970 |
| Rt down (K Ω) | 210.002 | 103.334 | 72.327 | 54.213 | 42.335 | 31.667 | 25.963 | 21.505 | 16.884 | 14.124 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 3.333 | 3.366 | 3.399 | 3.432 | 3.465 | 3.498 | 3.531 | 3.564 | 3.597 | 3.63 |
| Rt up (K Ω) | 369.179 | 96.88 | 59.466 | 41.454 | 28.235 | 22.058 | 17.6 | 14.23 | 10.837 | 8.857 |

AM20EW-xx05S-NZ, xx=24 or 48

| | | | | | | | | | | |
|-----------------------|---------|--------|--------|--------|--------|--------|--------|-------|-------|-------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 4.95 | 4.9 | 4.85 | 4.8 | 4.75 | 4.7 | 4.65 | 4.6 | 4.55 | 4.5 |
| Rt down (K Ω) | 105.180 | 52.153 | 31.996 | 21.377 | 14.822 | 10.372 | 7.154 | 4.719 | 2.811 | 1.276 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 5.05 | 5.1 | 5.15 | 5.2 | 5.25 | 5.3 | 5.35 | 5.4 | 5.45 | 5.5 |
| Rt up (K Ω) | 176.356 | 71.279 | 41.973 | 28.200 | 20.197 | 14.967 | 11.281 | 8.543 | 6.430 | 4.749 |

AM20EW-11005S-NZ

| | | | | | | | | | | |
|--------------|---------|--------|--------|--------|--------|--------|--------|-------|-------|-------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 4.95 | 4.9 | 4.85 | 4.8 | 4.75 | 4.7 | 4.65 | 4.6 | 4.55 | 4.5 |
| Rt down (KΩ) | 96.08 | 49.349 | 30.67 | 20.616 | 14.333 | 10.034 | 6.909 | 4.533 | 2.667 | 1.162 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 5.05 | 5.1 | 5.15 | 5.2 | 5.25 | 5.3 | 5.35 | 5.4 | 5.45 | 5.5 |
| Rt up (KΩ) | 205.698 | 76.406 | 44.023 | 29.296 | 20.879 | 15.431 | 11.617 | 8.798 | 6.63 | 4.91 |

AM20EW-11005SH22-NZ

| | | | | | | | | | | |
|--------------|---------|--------|--------|--------|--------|--------|--------|-------|-------|-------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 4.95 | 4.9 | 4.85 | 4.8 | 4.75 | 4.7 | 4.65 | 4.6 | 4.55 | 4.5 |
| Rt down (KΩ) | 105.181 | 52.154 | 31.997 | 21.378 | 14.823 | 10.373 | 7.155 | 4.719 | 2.811 | 1.277 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 5.05 | 5.1 | 5.15 | 5.2 | 5.25 | 5.3 | 5.35 | 5.4 | 5.45 | 5.5 |
| Rt up (KΩ) | 176.356 | 71.279 | 41.974 | 28.2 | 20.198 | 14.967 | 11.281 | 8.544 | 6.430 | 4.749 |

AM20EW-xx09S-NZ, xx=24 or 48

| | | | | | | | | | | |
|--------------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 8.91 | 8.82 | 8.73 | 8.64 | 8.55 | 8.46 | 8.37 | 8.28 | 8.19 | 8.1 |
| Rt down (KΩ) | 375.532 | 207.429 | 139.156 | 102.145 | 78.924 | 62.996 | 51.392 | 42.562 | 35.616 | 30.011 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 9.09 | 9.18 | 9.27 | 9.36 | 9.45 | 9.54 | 9.63 | 9.72 | 9.81 | 9.9 |
| Rt up (KΩ) | 314.531 | 112.638 | 64.147 | 42.357 | 29.974 | 21.989 | 16.412 | 12.296 | 9.134 | 6.628 |

AM20EW-xx12S-NZ, xx=24 or 48

| | | | | | | | | | | |
|--------------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 11.88 | 11.76 | 11.64 | 11.52 | 11.4 | 11.28 | 11.16 | 11.04 | 10.92 | 10.8 |
| Rt down (KΩ) | 496.091 | 301.451 | 212.527 | 161.585 | 128.573 | 105.441 | 88.332 | 75.163 | 64.715 | 56.223 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 12.12 | 12.24 | 12.36 | 12.48 | 12.6 | 12.72 | 12.84 | 12.96 | 13.08 | 13.2 |
| Rt up (KΩ) | 706.435 | 158.920 | 83.878 | 54.074 | 38.076 | 28.095 | 21.274 | 16.316 | 12.551 | 9.594 |

AM20EW-11012S-NZ

| | | | | | | | | | | |
|--------------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 11.88 | 11.76 | 11.64 | 11.52 | 11.4 | 11.28 | 11.16 | 11.04 | 10.92 | 10.8 |
| Rt down (KΩ) | 505.529 | 303.041 | 211.851 | 159.978 | 126.504 | 103.114 | 85.849 | 72.581 | 62.066 | 53.527 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 12.12 | 12.24 | 12.36 | 12.48 | 12.6 | 12.72 | 12.84 | 12.96 | 13.08 | 13.2 |
| Rt up (KΩ) | 614.769 | 150.097 | 78.994 | 50.198 | 34.607 | 24.832 | 18.13 | 13.249 | 9.536 | 6.616 |

AM20EW-11012SH22-NZ

| | | | | | | | | | | |
|--------------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 11.88 | 11.76 | 11.64 | 11.52 | 11.4 | 11.28 | 11.16 | 11.04 | 10.92 | 10.8 |
| Rt down (KΩ) | 496.092 | 301.452 | 212.527 | 161.585 | 128.573 | 105.442 | 88.332 | 75.164 | 64.716 | 56.223 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 12.12 | 12.24 | 12.36 | 12.48 | 12.6 | 12.72 | 12.84 | 12.96 | 13.08 | 13.2 |
| Rt up (KΩ) | 706.435 | 158.92 | 83.879 | 54.075 | 38.077 | 28.095 | 21.274 | 16.317 | 12.552 | 9.595 |

AM20EW-xx15S-NZ, xx=24 or 48

| | | | | | | | | | | |
|--------------|----------|---------|---------|---------|---------|---------|---------|---------|--------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 14.85 | 14.7 | 14.55 | 14.4 | 14.25 | 14.1 | 13.95 | 13.8 | 13.65 | 13.5 |
| Rt down (KΩ) | 634.883 | 400.637 | 288.513 | 222.758 | 179.536 | 148.959 | 126.187 | 108.568 | 94.532 | 83.086 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 15.15 | 15.3 | 15.45 | 15.6 | 15.75 | 15.9 | 16.05 | 16.2 | 16.35 | 16.5 |
| Rt up (KΩ) | 1460.098 | 192.573 | 96.641 | 61.354 | 43.016 | 31.781 | 24.191 | 18.720 | 14.590 | 11.361 |

AM20EW-11015S-NZ

| | | | | | | | | | | |
|--------------|----------|---------|---------|---------|---------|---------|---------|---------|--------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 14.85 | 14.7 | 14.55 | 14.4 | 14.25 | 14.1 | 13.95 | 13.8 | 13.65 | 13.5 |
| Rt down (KΩ) | 570.165 | 371.335 | 271.179 | 210.846 | 170.524 | 141.673 | 120.008 | 103.142 | 89.638 | 78.584 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 15.15 | 15.3 | 15.45 | 15.6 | 15.75 | 15.9 | 16.05 | 16.2 | 16.35 | 16.5 |
| Rt up (KΩ) | 3208.668 | 231.297 | 104.85 | 63.553 | 43.061 | 30.815 | 22.672 | 16.865 | 12.516 | 9.136 |

AM20EW-11015SH22-NZ

| | | | | | | | | | | |
|--------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 14.85 | 14.7 | 14.55 | 14.4 | 14.25 | 14.1 | 13.95 | 13.8 | 13.65 | 13.5 |
| Rt down (KΩ) | 974.008 | 517.391 | 346.387 | 256.863 | 201.789 | 164.487 | 137.551 | 117.187 | 101.251 | 88.44 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 15.15 | 15.3 | 15.45 | 15.6 | 15.75 | 15.9 | 16.05 | 16.2 | 16.35 | 16.5 |
| Rt up (KΩ) | 283.713 | 117.996 | 70.541 | 48.045 | 34.918 | 26.315 | 20.242 | 15.725 | 12.235 | 9.456 |

AM20EW-xx24S-NZ, xx=24 or 48

| | | | | | | | | | | |
|--------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 23.76 | 23.52 | 23.28 | 23.04 | 22.8 | 22.56 | 22.32 | 22.08 | 21.84 | 21.6 |
| Rt down (KΩ) | 1038.047 | 638.015 | 455.256 | 350.553 | 282.702 | 235.158 | 199.992 | 172.928 | 151.453 | 134 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 24.24 | 24.48 | 24.72 | 24.96 | 25.2 | 25.44 | 25.68 | 25.92 | 26.16 | 26.4 |
| Rt up (KΩ) | 816.889 | 179.913 | 94.338 | 60.463 | 42.306 | 30.987 | 23.256 | 17.640 | 13.375 | 10.027 |

AM20EW-11024S-NZ

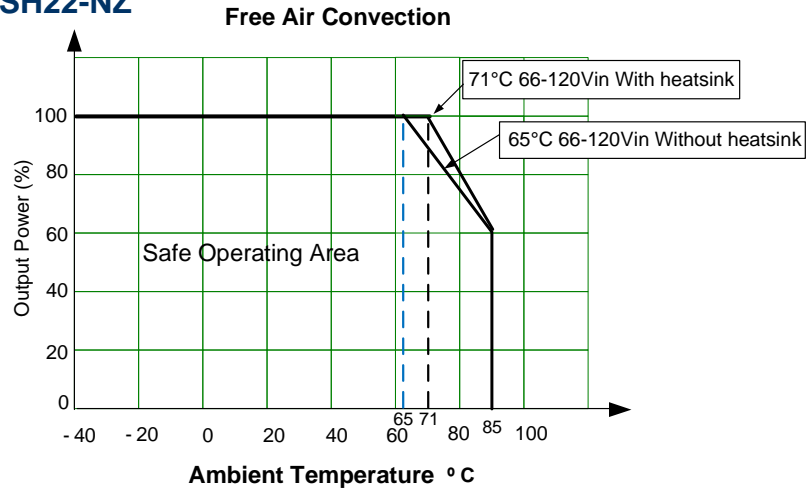
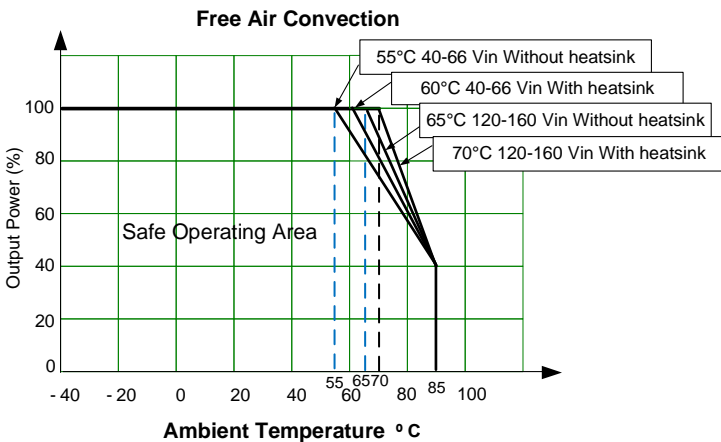
| | | | | | | | | | | |
|--------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 23.76 | 23.52 | 23.28 | 23.04 | 22.8 | 22.56 | 22.32 | 22.08 | 21.84 | 21.6 |
| Rt down (KΩ) | 1135.537 | 730.699 | 532.922 | 415.701 | 338.146 | 283.038 | 241.862 | 209.929 | 184.441 | 163.624 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 24.24 | 24.48 | 24.72 | 24.96 | 25.2 | 25.44 | 25.68 | 25.92 | 26.16 | 26.4 |
| Rt up (KΩ) | 2871.219 | 219.961 | 106.182 | 66.054 | 45.551 | 33.104 | 24.745 | 18.744 | 14.226 | 10.703 |

AM20EW-11024SH22-NZ

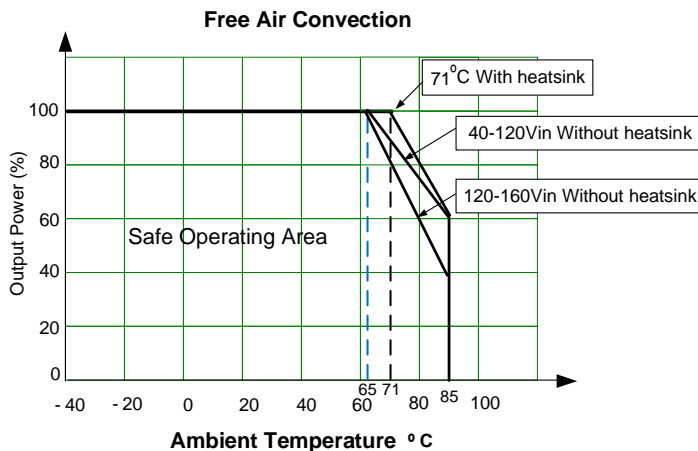
| | | | | | | | | | | |
|--------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 23.76 | 23.52 | 23.28 | 23.04 | 22.8 | 22.56 | 22.32 | 22.08 | 21.84 | 21.6 |
| Rt down (KΩ) | 1286.2 | 792.123 | 565.867 | 436.104 | 351.954 | 292.963 | 249.316 | 215.714 | 189.047 | 167.37 |
| Trim up % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 24.24 | 24.48 | 24.72 | 24.96 | 25.2 | 25.44 | 25.68 | 25.92 | 26.16 | 26.4 |
| Rt up (KΩ) | 816.889 | 179.914 | 94.338 | 60.464 | 42.307 | 30.988 | 23.257 | 17.64 | 13.376 | 10.027 |

Derating

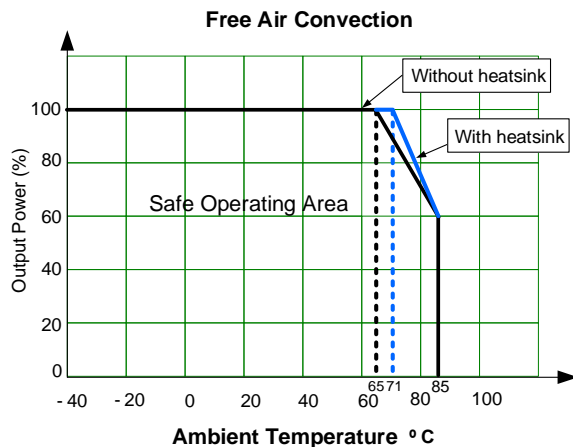
AM20EW-11005SH22-NZ



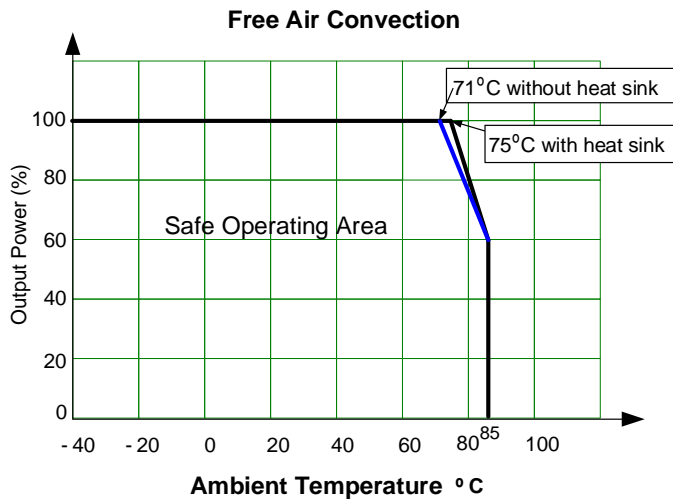
AM20EW-11003SH22-NZ



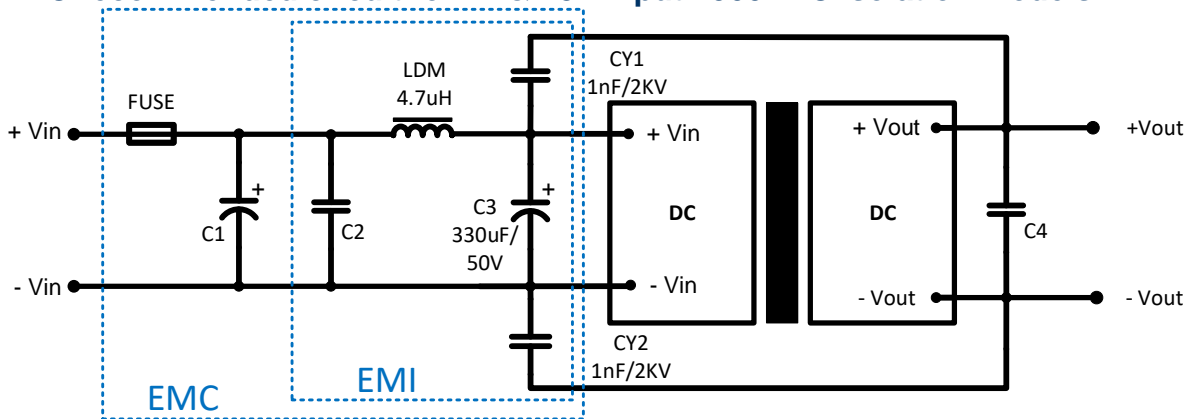
AM20EW-110xxDH30-NZ



Others

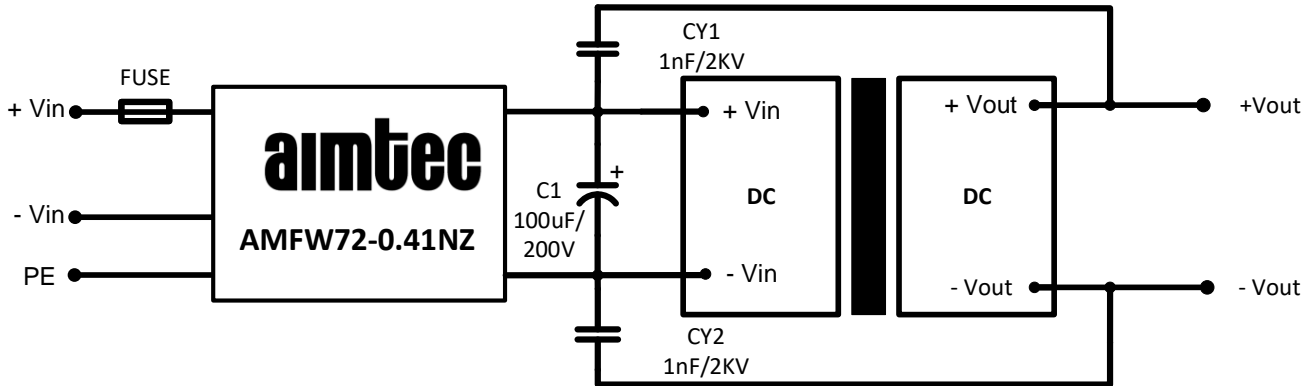


EMC recommended circuit for 24 & 48V input 1500VDC isolation models

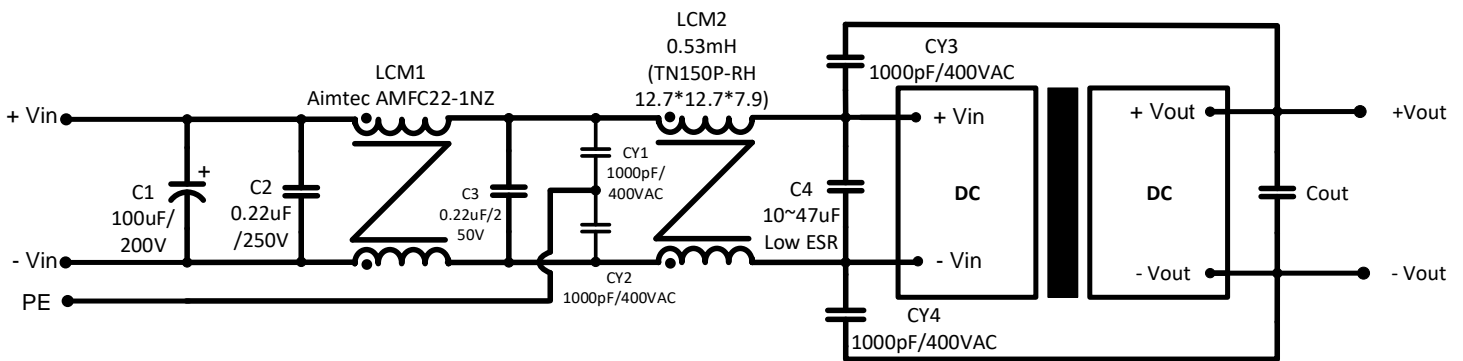


| Model | MOV | C1/C3 | C2 | C4 |
|--------|--------|---------------|-------------|--|
| 24 Vin | S14K35 | 330 μF / 50V | 1 μF / 50V | 470μF for 3.3 & 5V output 220μF for 9/12/15 & ±5 V output |
| 48 Vin | S14K60 | 330 μF / 100V | 1 μF / 100V | 100 μF for 24 & ±9/±12/±15 V output 220μF for ±5Voutput |

EMC recommended circuit for 110V input 1500VDC isolation models

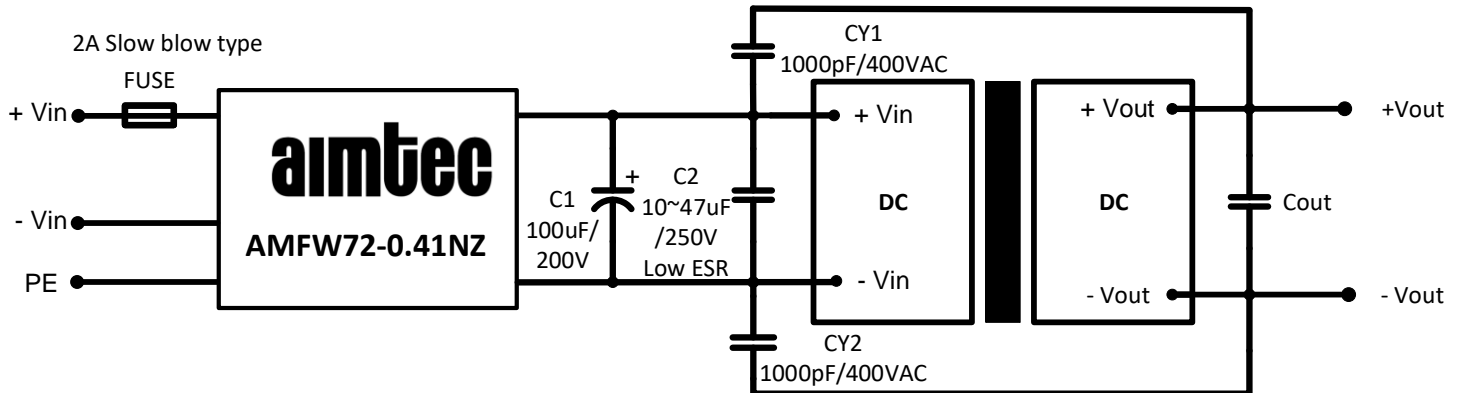


EMC recommended circuit with EN60950 compliant for 110Vin 2250VDC Isolation



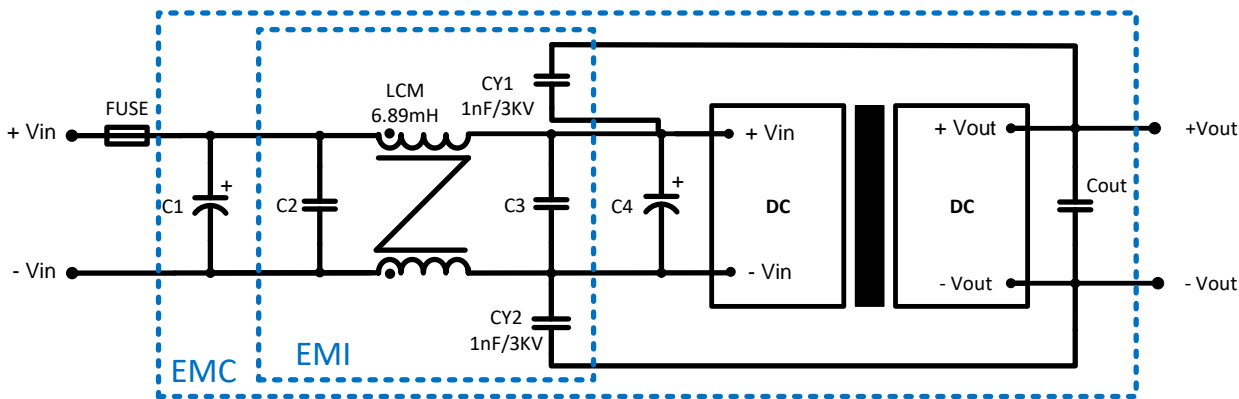
| Vout | Cout |
|---------|-------------|
| 3.3V/5V | 470 μ F |
| 12V/15V | 220 μ F |
| 24V | 100 μ F |

EMC recommended circuit with EN50155 compliant for 110Vin 2250VDC Isolation



| Vout | Cout |
|------------|-------------|
| 3.3V/5V | 470 μ F |
| 9V/12V/15V | 220 μ F |
| 18V/24V | 100 μ F |

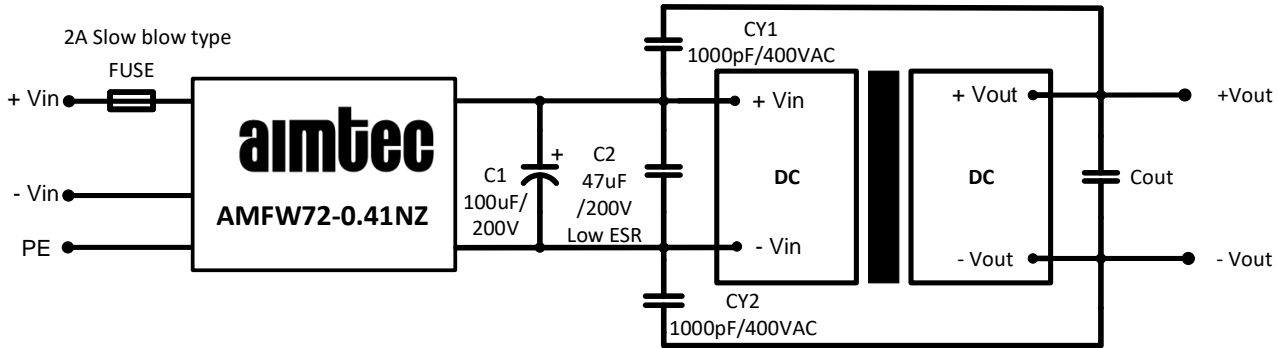
EMC recommended circuit for 24 & 48V input 3000VDC isolation models



| Model | C1 | C2 & C3 | C4 |
|--------|--------------------|------------------|--------------------|
| 24 Vin | 1000 μ F / 50V | 1 μ F / 50V | 330 μ F / 50V |
| 48 Vin | 680 μ F / 100V | 1 μ F / 100V | 330 μ F / 100V |

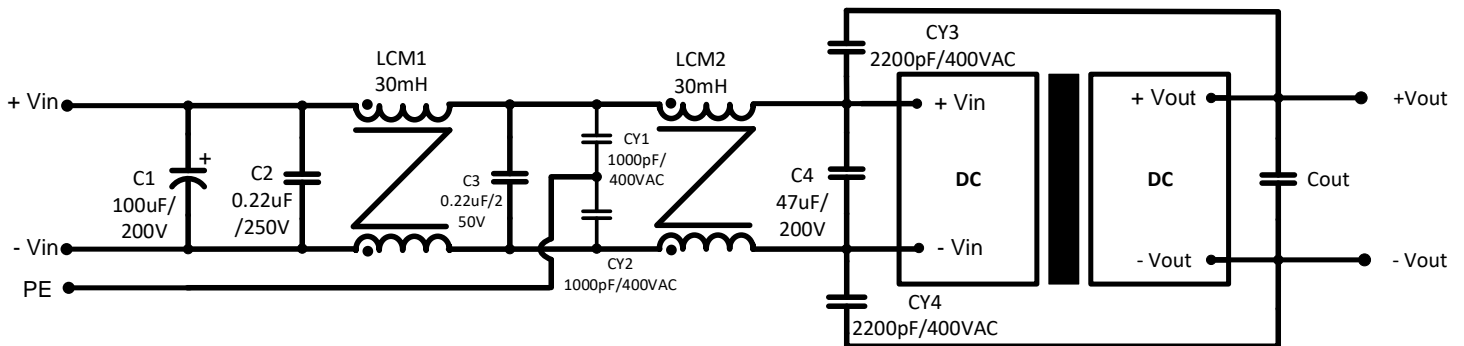
| Vout | Cout |
|------------|-------------|
| 3.3V/5V | 470 μ F |
| 9V/12V/15V | 220 μ F |
| 18V/24V | 100 μ F |

EMC recommended circuit with EN60950 compliant for 110V input 3000VDC isolation models



| Vout | Cout |
|----------------|-----------|
| ±12 Vout | 220uF/25V |
| ±15 & ±24 Vout | 100uF/35V |

EMC recommended circuit with EN50155 compliant for 110V input 3000VDC isolation models



| Vout | Cout |
|----------------|-----------|
| ±12 Vout | 220uF/25V |
| ±15 & ±24 Vout | 100uF/35V |

NOTE: 1. Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to www.aimtec.com for the most current product specifications. 2. Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. 3. Mechanical drawings and specifications are for reference only. 4. All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. 5. Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. 6. This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. 7. Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.