



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-11009S-NZ | 40-160 | 212/20 | 9 | 2222 | 1500 | 2200 | 88 |
| 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 heat sink for metal cased 1500VDC isolated 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” for optional heatsink preinstalled on metal cased models, “-K-ST” for optional heatsink and screw terminal bottom plate or “-K-STD” for optional heatsink and DIN Rail screw terminal bottom plate and reverse voltage protection.

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 | 30 | 28-33 | mA |

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, 60 sec, 1mA | 1600 | | VDC |
| | 110Vin 3000V isolation models, 60sec, 1mA | 1500 | | |
| Resistance | 500VDC I/O Isolation | >1000 | | MOhm |
| Capacitance | 1500VDC models 100KHz/0.1V | 2000 | | pF |
| | 110Vin 2250V & 3000V Isolation, I/O, 100KHz/0.1V | 2200 | | |
| | 3000VDC 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 | |

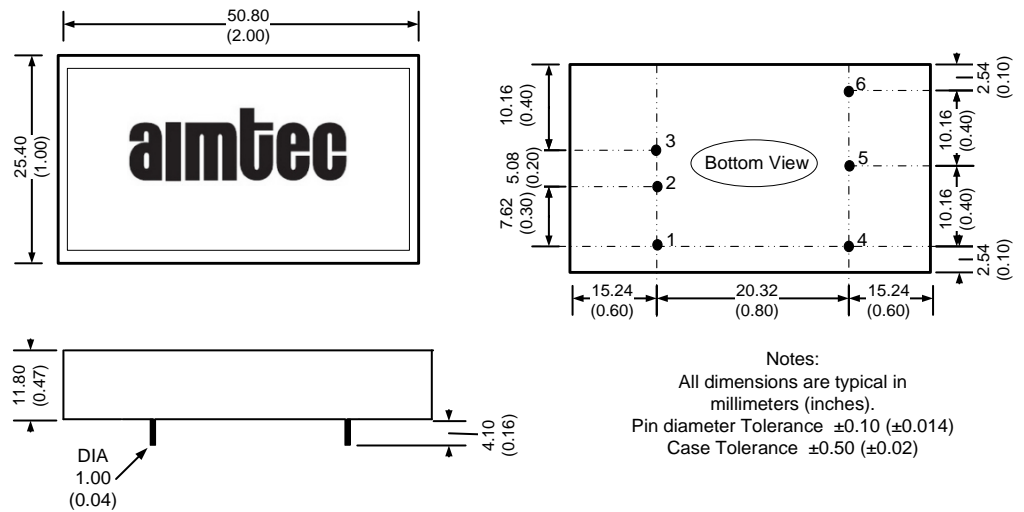
Safety Specifications

| Parameters | |
|------------|--|
| Approval | UL (without 110Vin models, AM20EW-4809S-NZ and AM20EW-2409D-NZ) , CE (110Vin models only) |
| Standards | IEC/UL 60950-1 EN 55022, Class B, with external filter & EN 55024: 2010 IEC 61000-4-2, Contact $\pm 6\text{KV}$ (110Vin 2250/3000VDC Isolation), Contact $\pm 4\text{KV}$ (Others), Criteria B IEC 61000-4-3, 10V/m, 20V/m(110Vin 3000VDC isolation), Criteria A IEC 61000-4-4, $\pm 4\text{KV}$ (110Vin 2250/3000 VDC Isolation), $\pm 2\text{KV}$ (Others), Criteria B, with external filter IEC 61000-4-5, $\pm 2\text{KV}$, Criteria B, with external filter IEC 61000-4-6, 10 Vrms (2250/3000 VDC Isolated models), 3Vrms (Others), Criteria A IEC 61000-4-29, 0-70%, Criteria B Meets EN50155 (110Vin, 2250/3000 VDC Isolated models) |

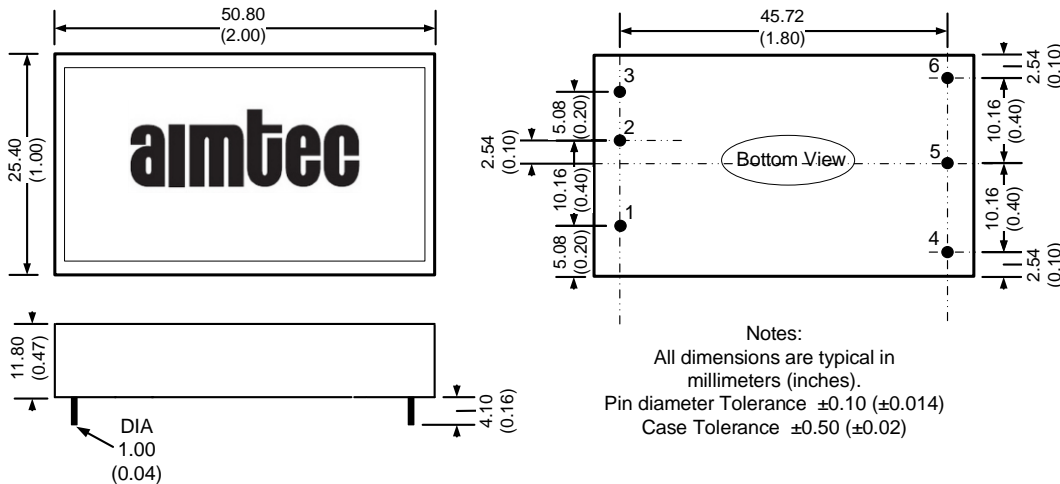
Pin Out Specifications

| 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 |

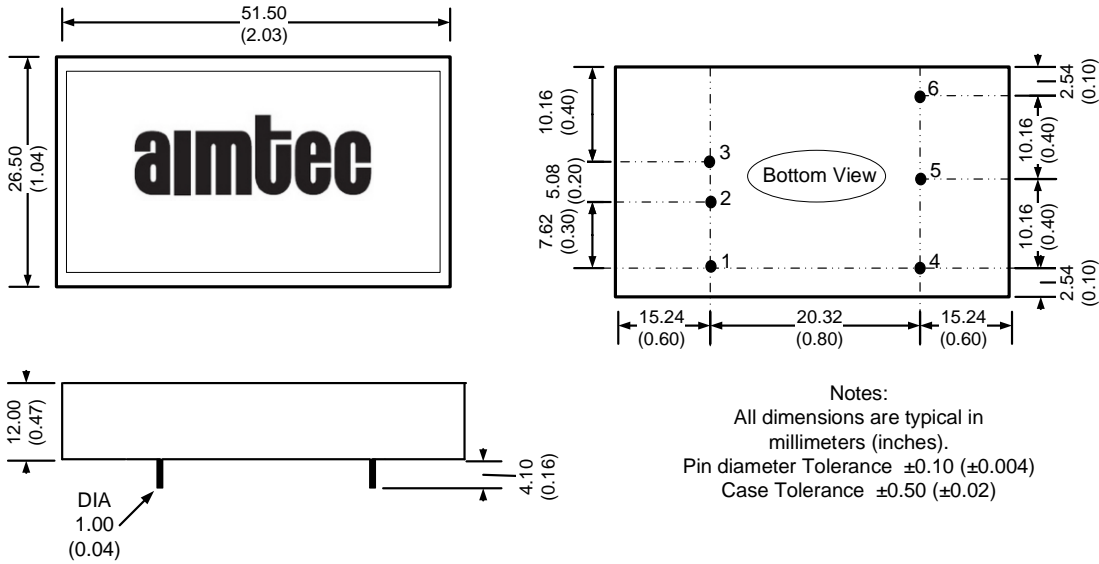
Dimensions metal case



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

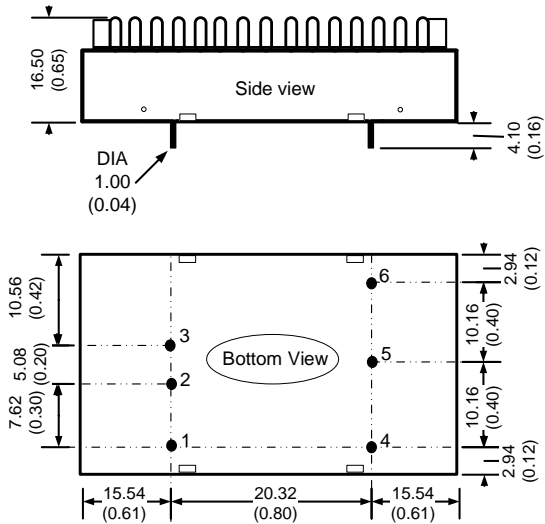


Dimensions plastic case



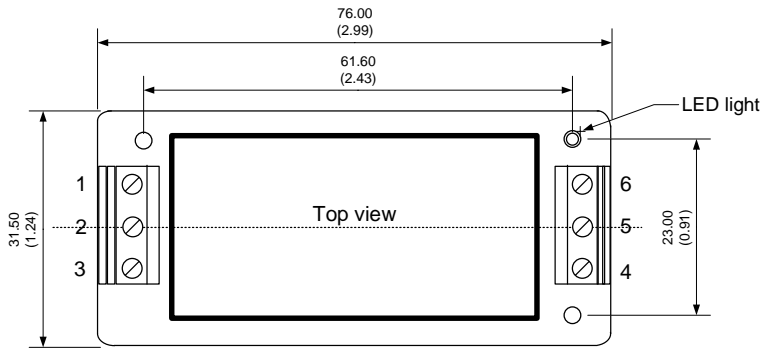
Notes:
All dimensions are typical in millimeters (inches).
Pin diameter Tolerance ± 0.10 (± 0.004)
Case Tolerance ± 0.50 (± 0.02)

Optional -K heatsink

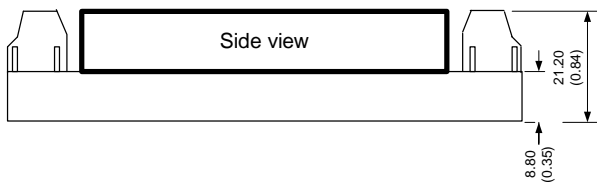


Notes:
All dimensions are typical in millimeters (inches).
Pin diameter Tolerance: ± 0.10 (± 0.004)
Case Tolerance: ± 0.50 (± 0.02)

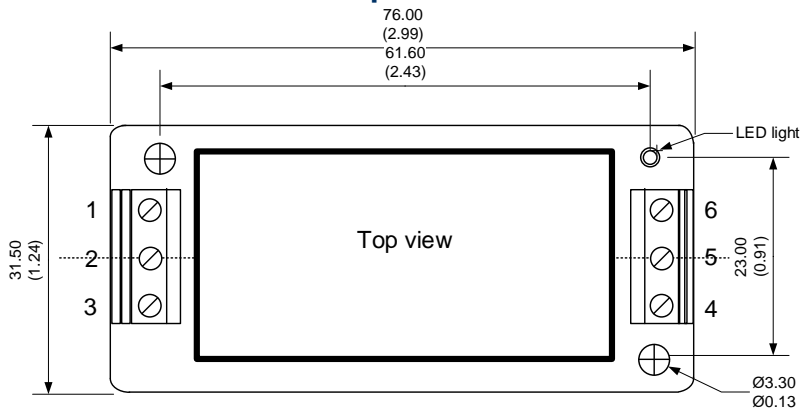
Dimensions with -ST options



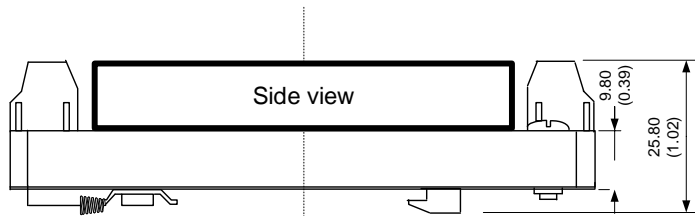
Dimensions: mm (inch)
Case Tolerance: ± 0.50 (0.02)
Wire gauge: 24-12AWG



Dimensions with -STD options



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



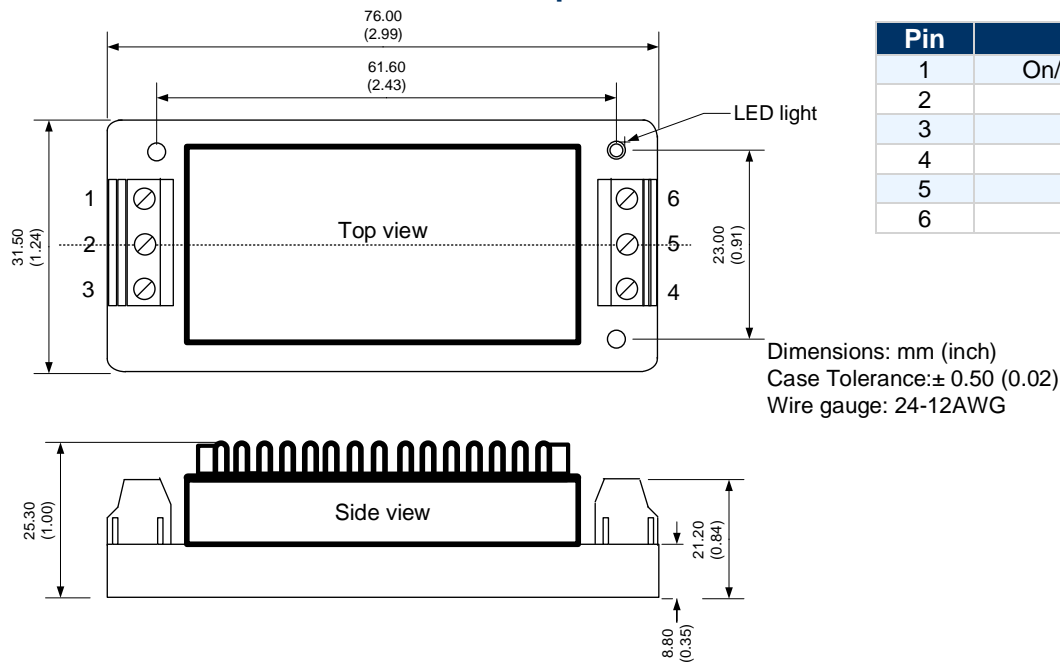
Pin Out Specifications

| 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 |

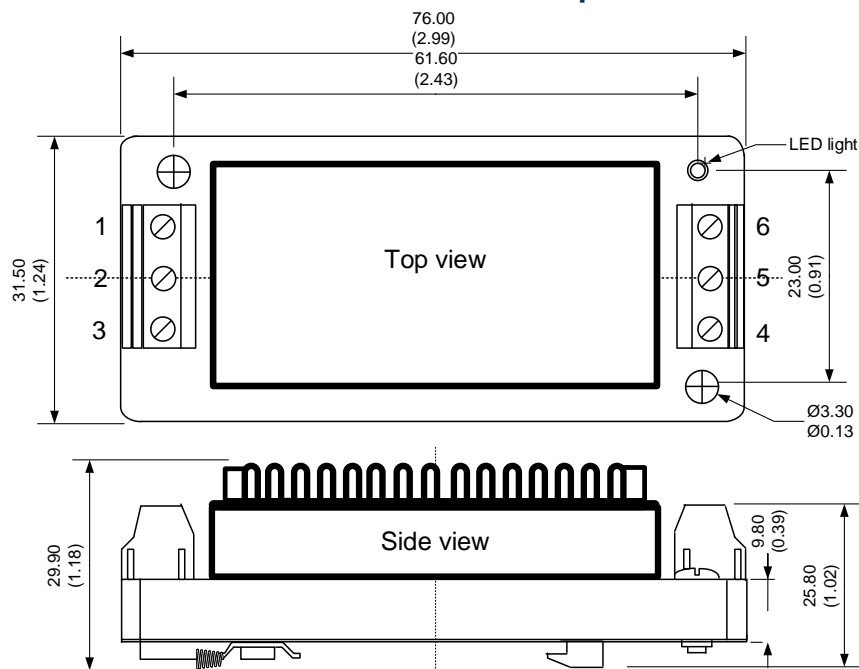
Dimensions with heatsink and -ST options



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



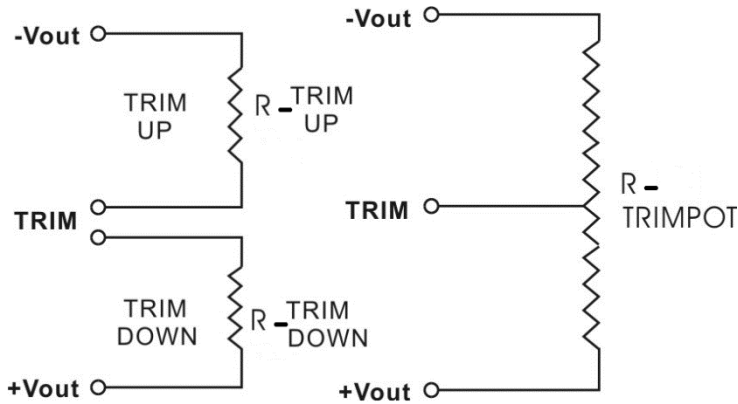
Pin Out Specifications

| 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 (KΩ) | 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 (KΩ) | -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 (KΩ) | 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 (KΩ) | 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 (KΩ) | 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 (KΩ) | 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

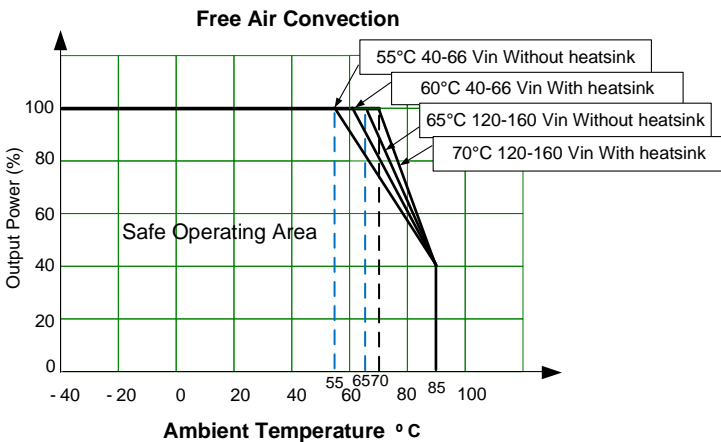
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|--------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 23.76 | 23.52 | 23.28 | 23.04 | 22.8 | 22.56 | 22.32 | 22.08 | 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

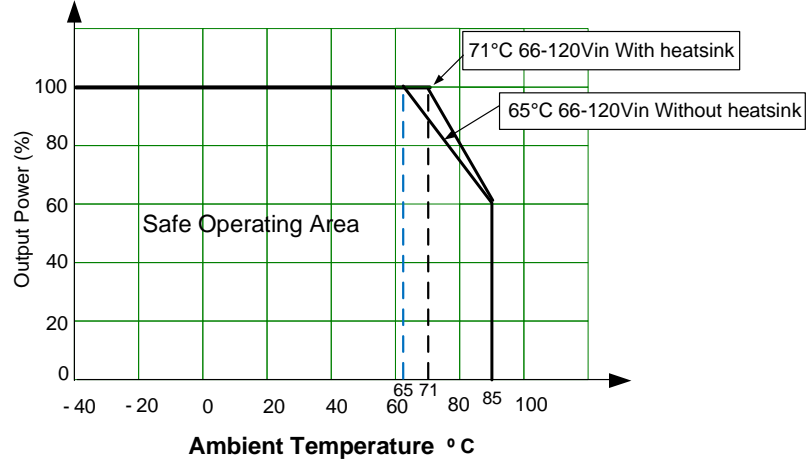
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|--------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| Trim down % | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (VDC) | 23.76 | 23.52 | 23.28 | 23.04 | 22.8 | 22.56 | 22.32 | 22.08 | 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

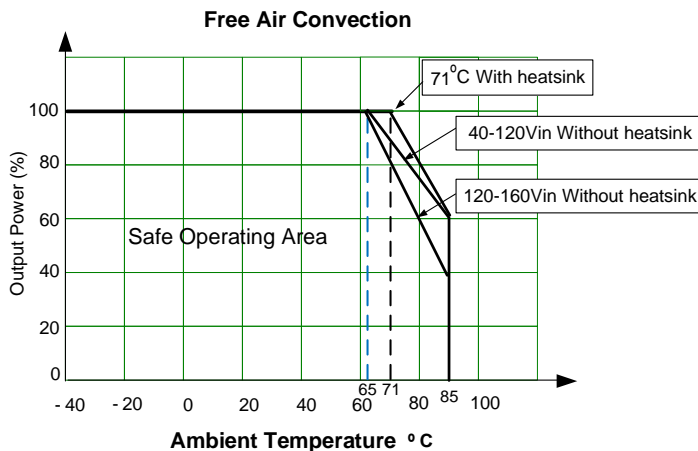
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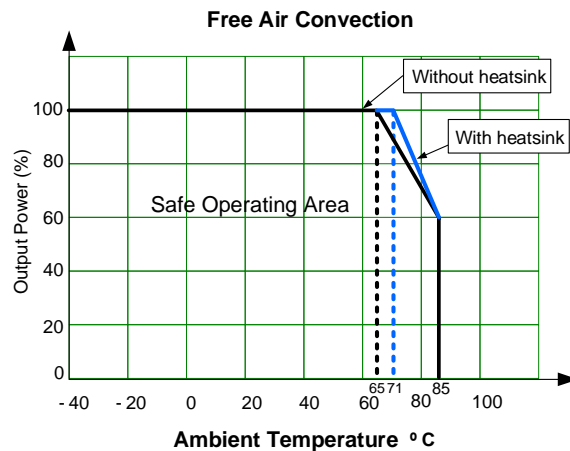
Free Air Convection



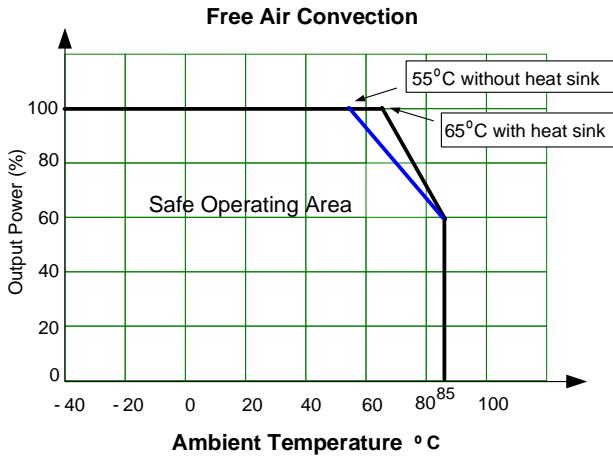
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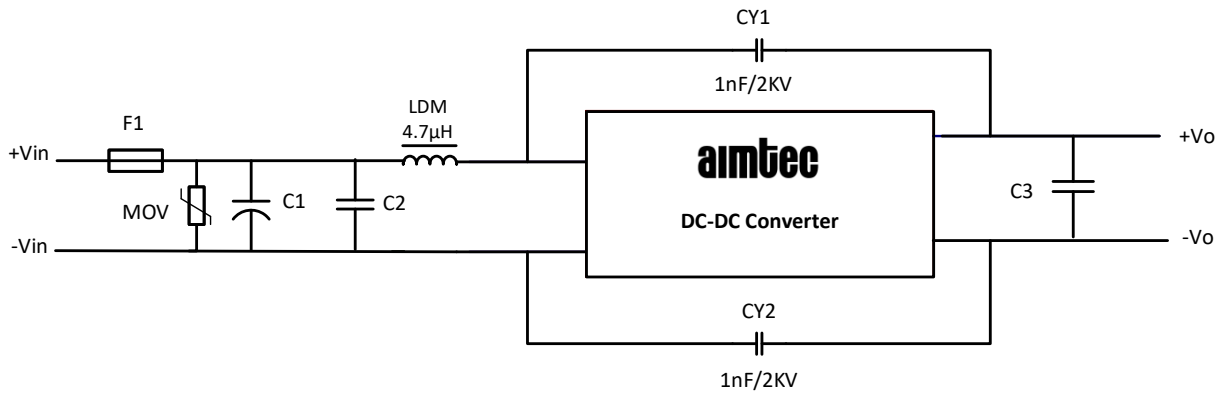
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Others

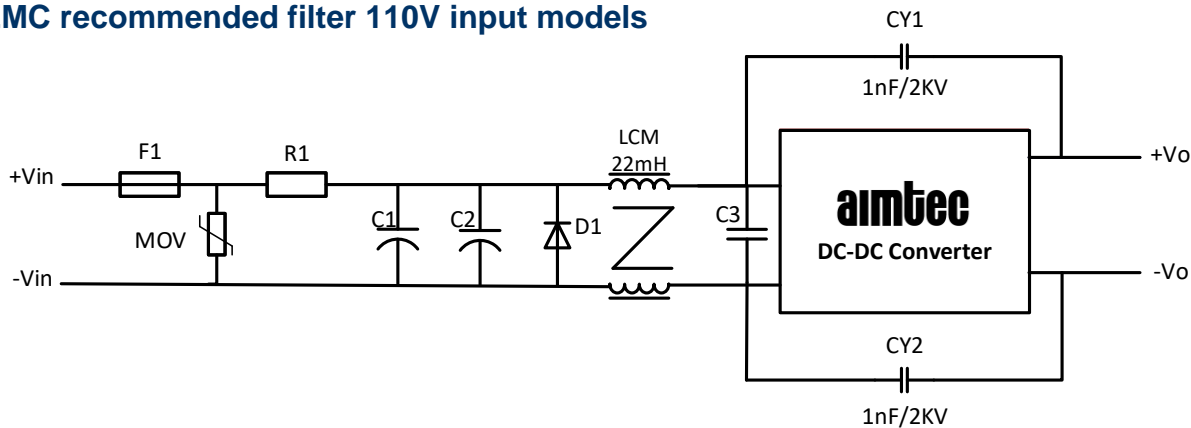


EMC recommended filter 24 & 48V input 1500VDC models



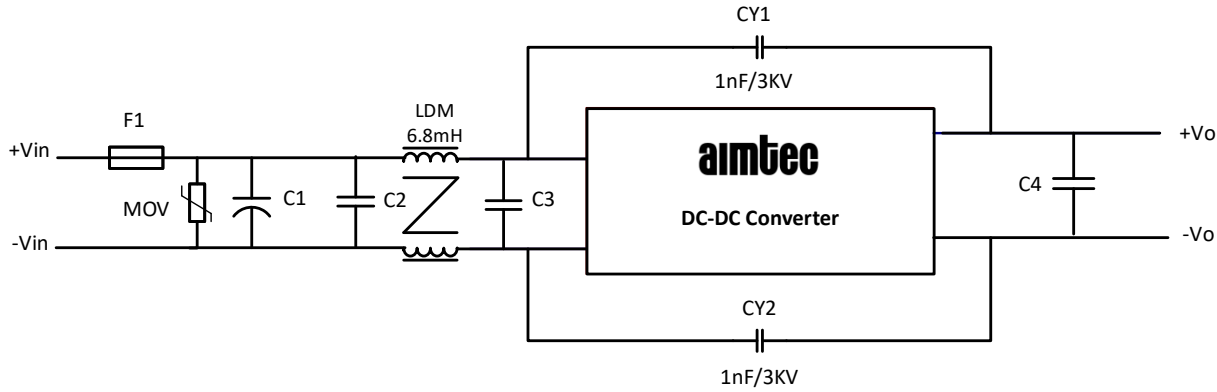
| Model | MOV | C1 | C2 | C3 |
|--------|--------|---------------|-------------|--|
| 24 Vin | S14K35 | 330 µF / 50V | 1 µF / 50V | 470µF for 3.3 & 5V output 220µF for 9/12/15 & ±5 V output 100 µF for 24 & ±9/±12/±15 V output 220µF for ±5Voutput |
| 48 Vin | S14K60 | 330 µF / 100V | 1 µF / 100V | |

EMC recommended filter 110V input models



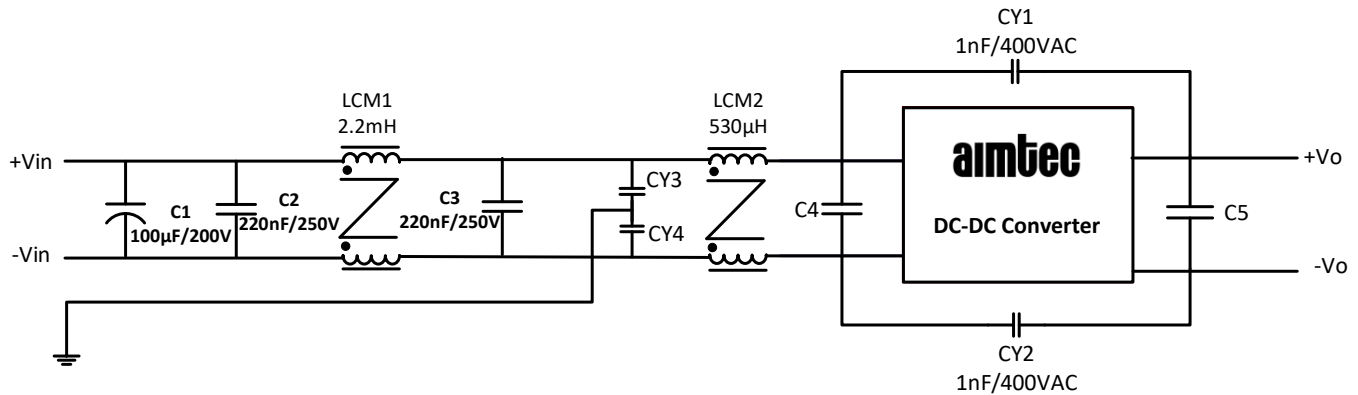
| MOV | C1 & C2 | R1 | C3 | D1 |
|---------|-------------|-----|---------------|-------|
| S20K130 | 1 µF / 200V | 1 Ω | 100 µF / 200V | ER304 |

EMC recommended filter for 24 & 48V input 3000VDC models



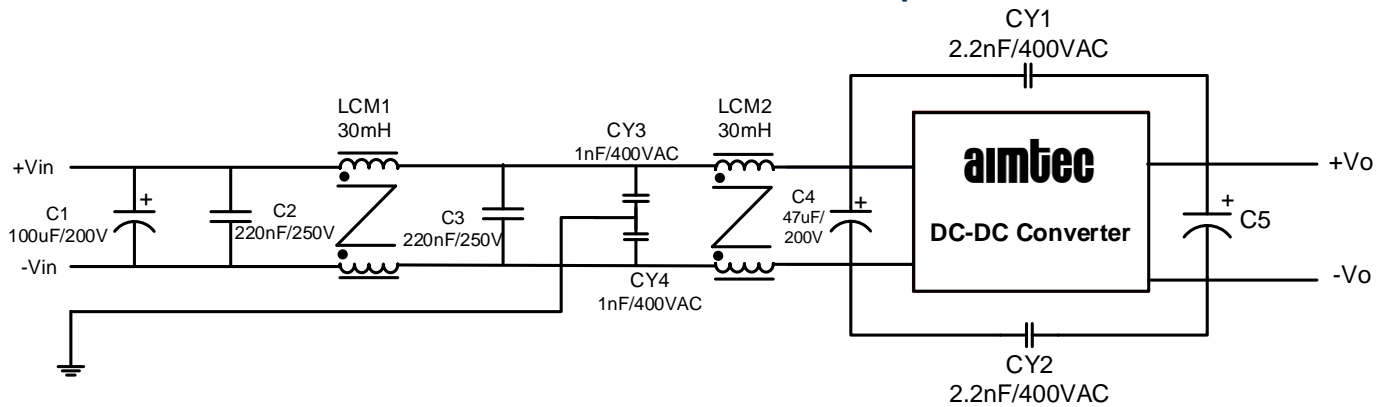
| Model | MOV | C1 | C2 & C3 | C4 |
|--------|--------|--------------------|------------------|--|
| 24 Vin | S14K35 | 330 μ F / 50V | 1 μ F / 50V | 470 μ F for 3.3 & 5V output 220 μ F for 9/12/15V output 100 μ F for 24V output |
| 48 Vin | S14K60 | 330 μ F / 100V | 1 μ F / 100V | |

EMC recommended filter for 110Vin 2250V Isolation



| CY3 & CY4 | C4 | Vout | C5 |
|------------|----------------------|-----------|-------------|
| 1nF / 400V | 10-47 μ F / 250V | 3.3V & 5V | 470 μ F |
| | | 12V & 15V | 220 μ F |
| | | 24V | 100 μ F |

EMC recommended filter for 110Vin 3000V Isolation Dual output models



| Model | C5 |
|----------------|-----------|
| ±12 Vout | 220uF/25V |
| ±15 & ±24 Vout | 100uF/35V |

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