aimtec
Your Power Partner

Series AM10EW-NZ

10 Watt | DC-DC Converter

FEATURES:

- Efficiency up to 87%
- Ultra-Wide 4:1 input range
- Continuous Short Circuit Protection
- Operating temperature -40°C to + 85°C
- 110Vin models design to meet EN50155
- Input Under-voltage Protection
- Over Voltage, Over Current Protection
- I/O Isolation 2250 & 3000VDC
- On/Off remote control

Models
Single output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	I/O Isolation (VDC)	Capacitive load max (µF)	Efficiency (%)
AM10EW-2403SH30-NZ*	9-36	3.3	2400	3000	5400	78
AM10EW-2405SH30-NZ*	9-36	5	2000	3000	5400	82
AM10EW-2409SH30-NZ*	9-36	9	1111	3000	680	84
AM10EW-2412SH30-NZ*	9-36	12	833	3000	470	84
AM10EW-2415SH30-NZ*	9-36	15	667	3000	330	87
AM10EW-2424SH30-NZ	9-36	24	416	3000	100	86
AM10EW-4803SH30-NZ	18-75	3.3	2400	3000	5400	79
AM10EW-4805SH30-NZ	18-75	5	2000	3000	5400	82
AM10EW-4812SH30-NZ	18-75	12	833	3000	470	86
AM10EW-4815SH30-NZ	18-75	15	667	3000	330	87
AM10EW-4824SH30-NZ	18-75	24	416	3000	100	87
AM10EW-11003SH22-NZ	40-160	3.3	2400	2250	5400	76
AM10EW-11005SH22-NZ	40-160	5	2000	2250	5400	80
AM10EW-11012SH22-NZ	40-160	12	833	2250	470	84
AM10EW-11015SH22-NZ	40-160	15	667	2250	330	84
AM10EW-11024SH22-NZ	40-160	24	417	2250	100	85

*** For 110Vin single output models, add suffix "- K" for optional heatsink or "- K-ST" for optional heatsink with screw terminal bottom plate or "-K-STD" for optional heatsink with DIN Rail screw terminal bottom plate.**

*** Add suffix "-ST" for optional screw terminal bottom plate or "-STD" for optional DIN Rail screw terminal bottom plate.**

*** "-ST" and "-STD" options come with reverse polarity protection. 24Vin and 48Vin models with "-ST" or "-STD" option will increase the minimum input voltage and under voltage lockout threshold by 1V and reduce the efficiency by 2%. 110Vin models with "-ST" or "-STD" option will reduce the efficiency by 2%**

Models
Dual output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	I/O Isolation (VDC)	Capacitive load max (µF)	Efficiency (%)
AM10EW-2405DH30-NZ	9-36	±5	±1000	3000	±1000	81
AM10EW-2412DH30-NZ	9-36	±12	±416	3000	±330	85
AM10EW-2415DH30-NZ	9-36	±15	±333	3000	±220	87
AM10EW-4805DH30-NZ	18-75	±5	±1000	3000	±1000	82
AM10EW-4812DH30-NZ	18-75	±12	±416	3000	±330	86
AM10EW-4815DH30-NZ	18-75	±15	±333	3000	±220	87
AM10EW-11005DH22-NZ	40-160	±5	±1000	2250	±1000	80
AM10EW-11012DH22-NZ	40-160	±12	±417	2250	±470	84
AM10EW-11015DH22-NZ	40-160	±15	±334	2250	±330	84

*** For 110Vin dual output models, add suffix "- O" for no on/off control option. (ex. AM10EW-11005DH22-NZ-O Has no on/off control and no Ctrl pin.)**

*** For 24Vin dual output, and 48Vin dual output models, add suffix "-ST" for optional screw terminal bottom plate or "-STD" for optional DIN Rail screw terminal bottom plate.**

*** "-ST" and "-STD" options come with reverse polarity protection. 24Vin and 48Vin models with "-ST" or "-STD" option will increase the minimum input voltage and under voltage lockout threshold by 1V and reduce the efficiency by 2%.**

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 48 110	9-36 18-75 40~160	40 80 170	VDC
Input Current (full load)	24Vin, 3.3Vout 24Vin, others 48Vin, 3.3Vout 48Vin, others 110Vin, 3.3Vout 110Vin, ±5Vout 110Vin, ±12, ±15Vout 110Vin, others	423 514 208 254 95 113 108 110	527 434 214 260 98 117 111 117	mA
Filter	π (Pi) Network			
Input surge Voltage (1sec max.)	24 48 110		50 100 180	VDC
Start-up time	Nominal Input, resistive load	10		ms
Reflected Input Ripple Current	24 48 110	40 30 25		mA
Under-voltage lockout	24 48 110	6.5 15.5 33		V
Remote On/Off Control (Except 110Vin single output models)	On Off	3.5-12VDC or leave open 0-1.2VDC or connect to GND		
Idle current when off			10	mA

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	1 min, <1mA		2250, 3000	VDC
Tested I/Case & O/Case	1 min, <1mA, 110Vin single output models 1 min, <1mA, 110Vin dual output models		1600 1500	VDC
Resistance	At 500VDC Isolation	> 1000		MOhm
Capacitance	24 & 48 Vin, I/O, 100KHz/0.1V 110 Vin, I/O, 100KHz/0.1V	500 2200		pF

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	AM10EW-11005DH22-NZ, 5-100% load Others, 0-100% load	±1	±3	%
Line voltage regulation	Positive output Negative output	±0.2 ±0.5	±0.5 ±1	%
Load voltage regulation	110Vin single output, 0-100% load Others, 5-100%, positive output Others, 5-100%, negative output	±0.5 ±0.5 ±0.5	±1 ±1 ±1.5	%
Cross Regulation	110Vin, +Vout 50% load, -Vout 25-100% load Others, +Vout 50% load, -Vout 10-100% load		±5	%
Short Circuit protection	Continuous, Auto Recovery			
Over Voltage Protection	110Vin models others	> 110 130	160 160	% of Vo
Over Current Protection	24 & 48 Vin models 110 Vin single output 110 Vin dual output	140 > 120 > 110	190 210 210	% of Io
Transient Recovery Time	110 Vin , 25% Load Step Change	300	500	µs
Transient Recovery Deviation	AM10EW-4803SH30-NZ 110Vin dual output, ±5Vout 110Vin single output, 3.3, 5Vout Others, 25% Load Step Change	±5 ±4 ±3 ±3	±8 ±8 ±8 ±5	%
Temperature coefficient			±0.03	%/°C
Ripple & Noise	110Vin, 5-100% load, 20Mhz bandwidth Others, 5-100% load, 20Mhz bandwidth	50 60	100 120	mV p-p

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	110 Vin, 100% load Others, 100% load	300 350		KHz
Operating temperature	Derating above 71°C	-40 to +85		°C
Storage temperature		-55 to +125		°C
Max case temperature			105	°C
Cooling	Free air convection			
Humidity	Non-condensing		95	%
Solder Temp Leads	1.5 mm from case 10 sec.		300	°C
Case material	Plastic (24, 48Vin models) Aluminum Alloy (Others)			
Weight	Pin mountable, 24, 48Vin models Pin mountable, 110Vin single output models Pin mountable, 110Vin dual output models	21.2 26 27		g
	-ST option, 24, 48Vin models -ST option, 110Vin models	46 48		
	-STD option, 24, 48Vin models -STD option, 110Vin models	66 68		
	-K option, 110Vin single output models -K-ST option, 110Vin single output models -K-STD option, 110Vin single output models	34 56 76		
Dimensions (L x W x H)	24, 48Vin models	2.03 x 1.04 x 0.47inches, 51.50 x 26.50 x 12.00mm		
	110Vin models	2.00 x 1.00 x 0.46inches, 50.80 x 25.40 x 11.80mm		
	Optional packages	See dimensions drawing		
MTBF	>1 000 000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°C)			

Environmental Specifications

Parameters		
Vibration (24 & 48 Vin)	Test mode	10-55Hz
	Acceleration	2G, 30min, every axis tested
Vibration (110 Vin)	IEC61373 - Category 1, Grade B	

Safety Specifications

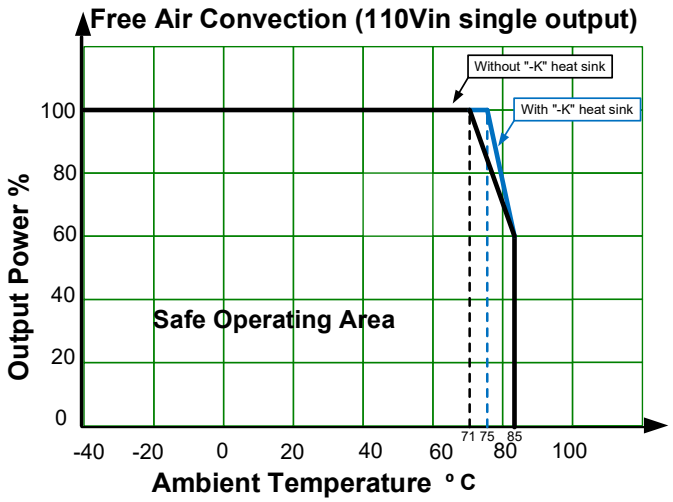
Parameters		
Approvals	CE	
Standards	EN/IEC60950-1, Designed to meet UL60950-1 (24 & 48 Vin models only except models marked with *) Design to meet EN62368, EN50155 (2250 VDC Isolated models)	
	EMI - Conducted and radiated emission	EN55032, class A (all models) Class B (110Vin models) (110Vin dual output models with recommended EMC circuit 1 or 2) (110Vin single output models with recommended EMC circuit 3 or 4) EN50121-3-2 150kHz-500kHz 99dBuV (110Vin models) EN55016-2-1 500kHz-30MHz 93dBuV (110Vin models) EN50121-3-2 30MHz-230MHz 40dBuV/m at 10m (110Vin models) EN55016-2-1 230MHz-1GHz 47dBuV/m at 10m (110Vin models)
	Electrostatic Discharge Immunity	IEC61000-4-2, Contact ±6KV, Air ±8KV (110Vin models), Contact ±4KV, Criteria B (24 & 48 Vin models) EN50121-3-2 Contact ±6KV, Air ±8KV, Criteria B (110Vin models)
	RF, Electromagnetic Field Immunity	IEC61000-4-3, 10V/m, Criteria A EN50121-3-2 20V/m, Criteria A (110Vin models)
	Electrical Fast Transient/Burst Immunity	IEC61000-4-4, ±4KV, Criteria B (110Vin dual output models with recommended EMC circuit 1 or 2) (110Vin single output models with recommended EMC circuit 3 or 4) ±2KV, Criteria B (24 & 48 Vin with the recommended EMC circuit 5) EN50121-3-2 ±2kV, 5/50ns, 5KHz, Criteria A (110Vin models)
	Surge Immunity	IEC61000-4-5, L-L ±2KV, Criteria B, (24 & 48 Vin with the recommended EMC circuit 5) L-L ±2KV, L-G ±4KV, Criteria B (110Vin dual output models with recommended EMC circuit 1) (110Vin single output models with recommended EMC circuit 3)

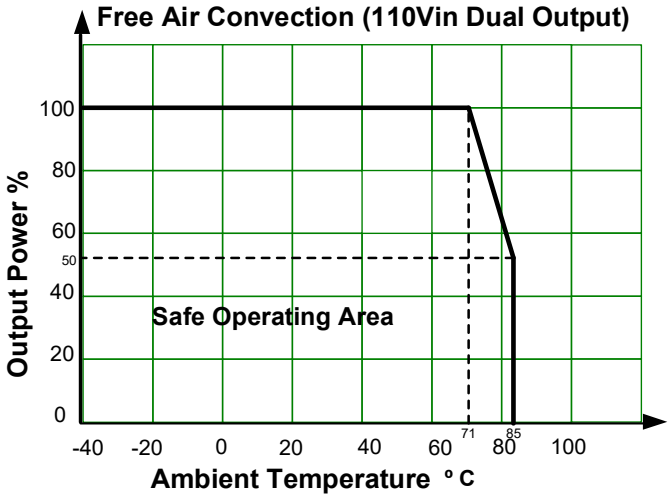
		EN50121-3-2 L-L ±1KV (42Ω 0.5μF), L-G ±2KV (42Ω 0.5μF), Criteria B (110Vin models)
	RF, Conducted Disturbance Immunity	IEC61000-4-6, 3 Vrms, Criteria A (24 & 48 Vin models) 10 Vrms, Criteria A (110Vin models) EN50121-3-2 0.15MHz-80MHz 10Vr.m.s, Criteria A (110Vin models)
	Voltage dips, short interruptions and voltage variations immunity	IEC61000-4-29, 0-70%, Criteria B (24 & 48 Vin models)

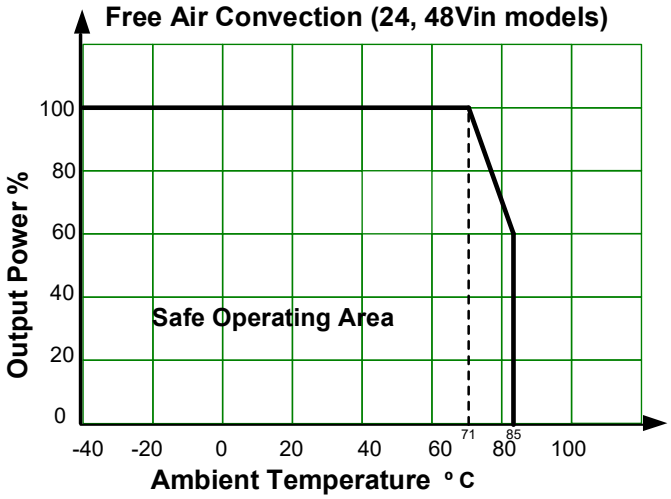
***For 110Vin dual output models, EN50155, EN50121-3-2 and EN55016-2-1 are measured with an input capacitor 100μF/200V or AMFW72-13NZ.**

***For 110Vin single output models, EN50155, EN50121-3-2 and EN55016-2-1 are measured with an input capacitor 100μF/200V or AMFW72-0.41NZ.**

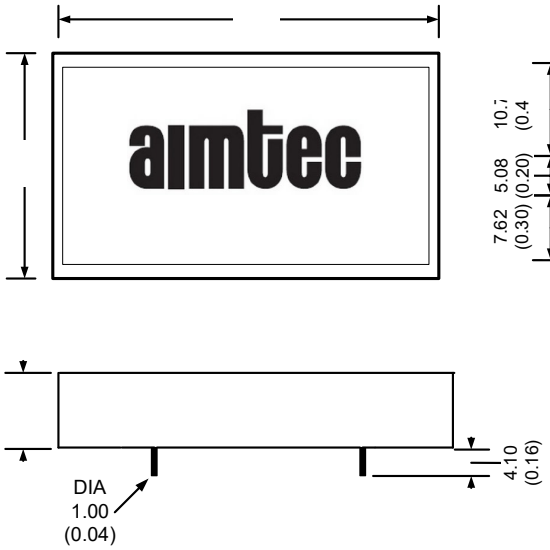
Derating







Pin Out Specifications
24 & 48 Vin models

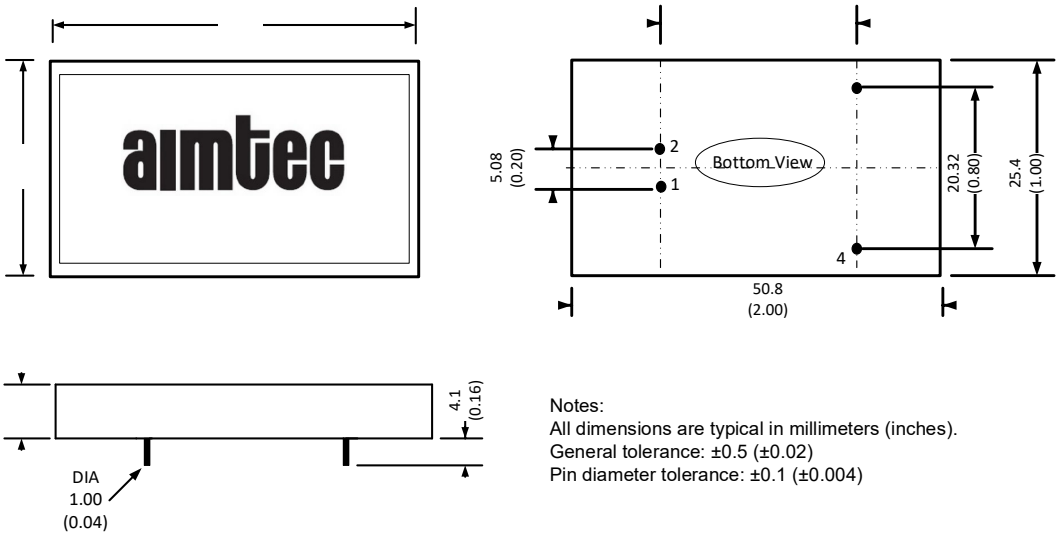


Pin	Single
1	On/Off Control
2	-Vin
3	+Vin
4	- Vout
5	No pin
6	+ Vout

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

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

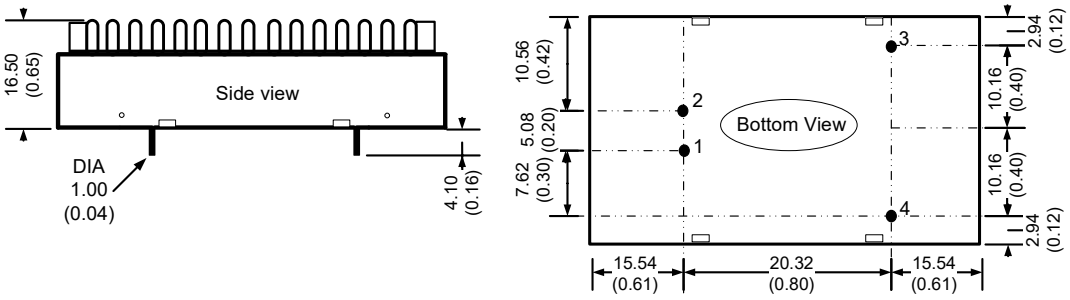
110Vin single output models



Pin	Single
1	Vin -
2	Vin +
3	+Vout
4	-Vout

Notes:
All dimensions are typical in millimeters (inches).
General tolerance: ±0.5 (±0.02)
Pin diameter tolerance: ±0.1 (±0.004)

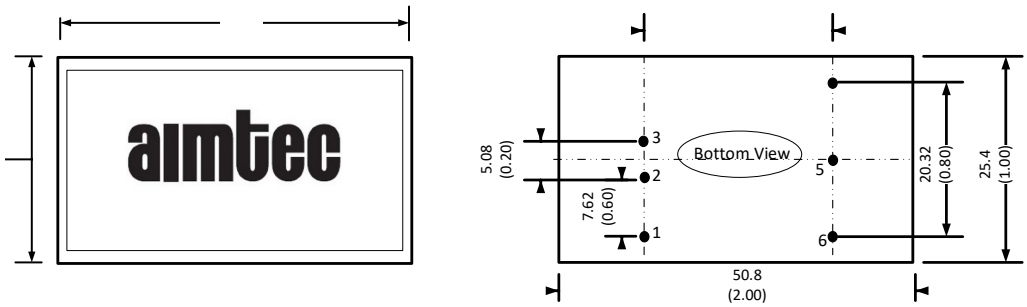
110Vin single output models with -K option



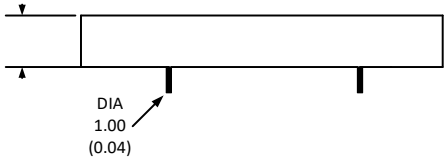
Pin	Single
1	Vin -
2	Vin +
3	+Vout
4	-Vout

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

110Vin dual output models

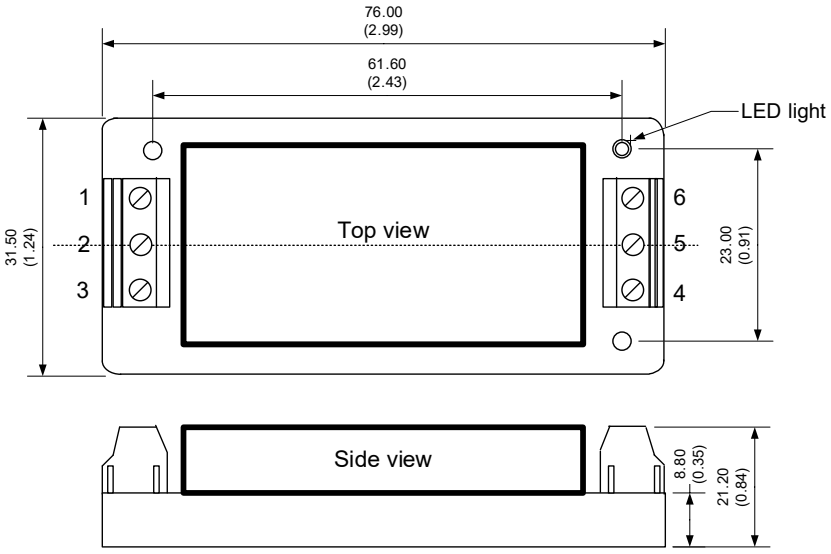


Pin	Single
1	Ctrl
2	-V Input
3	+V Input
4	+V Output
5	Common
6	-V Output



Notes:
All dimensions are typical in millimeters (inches).
General tolerance ±0.5 (±0.02)
Pin diameter tolerance ±0.1 (±0.004)

Dimensions with -ST options



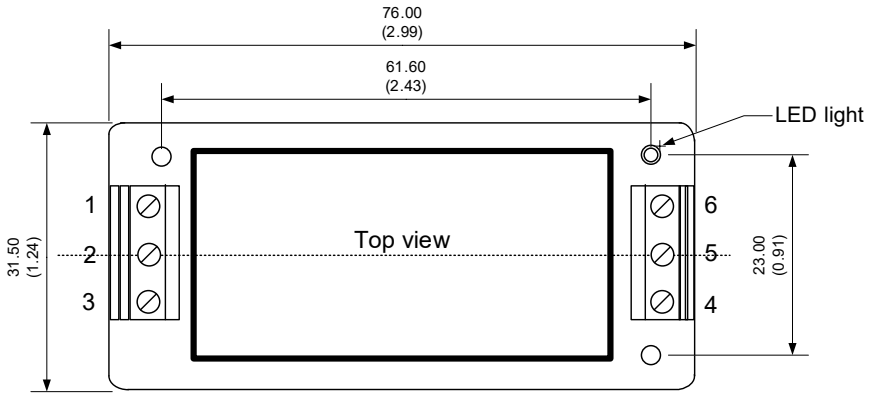
Dimensions: mm (inch)
General Tolerance: ±0.50 (0.02)
Tightening torque: 0.4N-m max.
Wire gauge: 24-12AWG

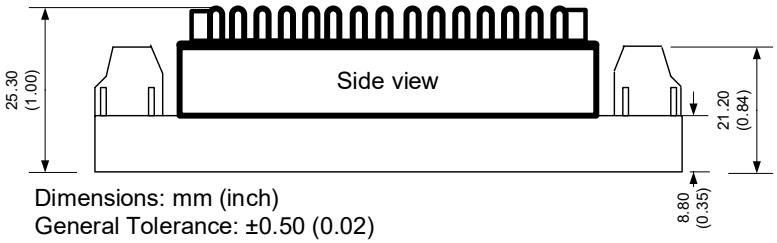
Pin Out Specifications

110Vin models	
Pin	**Single**
1	N.C.
2	-Vin
3	+Vin
4	+ Vout
5	N.C.
6	- Vout

24 & 48 Vin models		
Pin	**Single**	**Dual**
1	On/Off Control	On/Off Control
2	-Vin	-Vin
3	+Vin	+Vin
4	+ Vout	+ Vout
5	NC	Common
6	- Vout	- Vout

110Vin single output models with -K-ST option

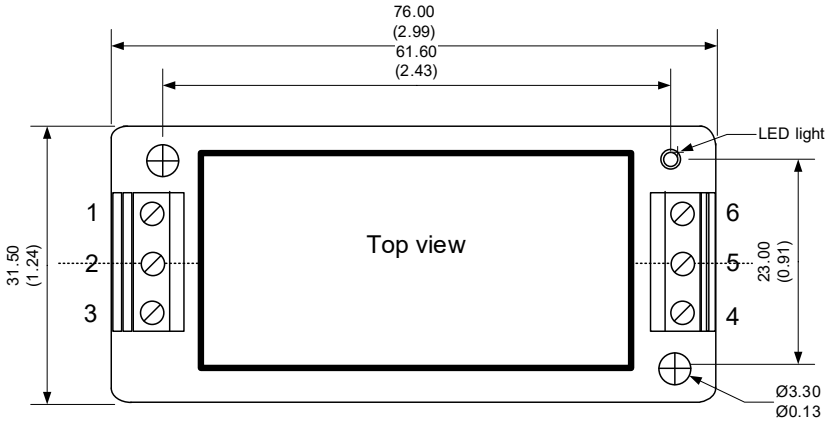


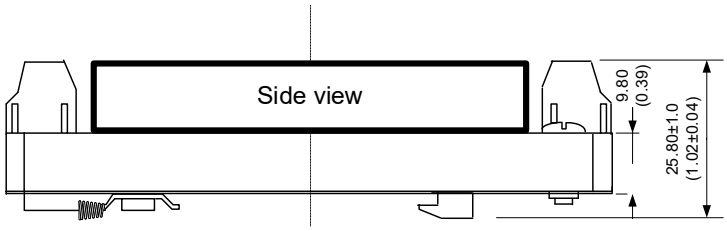


Dimensions: mm (inch)
General Tolerance: ±0.50 (0.02)
Tightening torque: 0.4N-m max.
Wire gauge: 24-12AWG

110Vin models	
Pin	Single
1	N.C.
2	-Vin
3	+Vin
4	+ Vout
5	N.C.
6	- Vout

Dimensions with -STD options





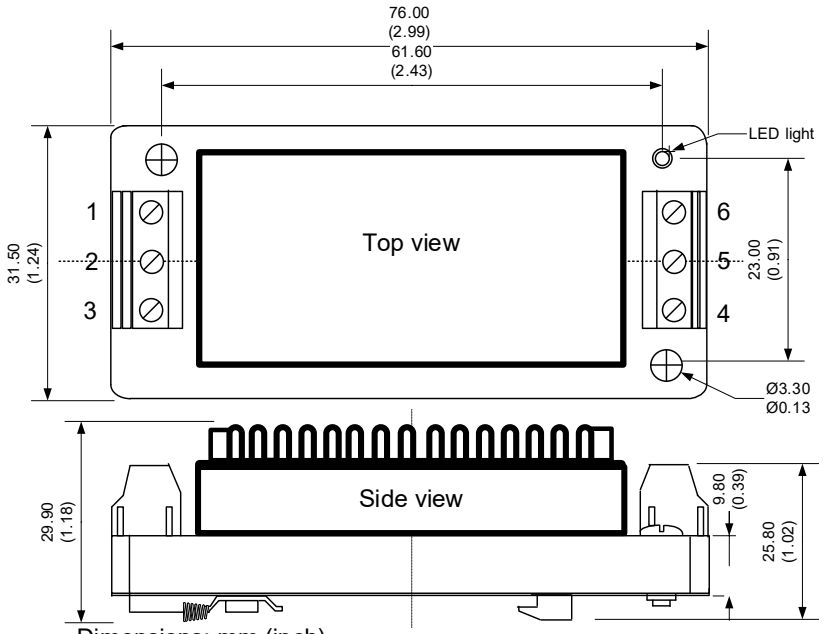
Dimensions: mm (inch)
General tolerance: ±0.50 (0.02)
Tightening torque: 0.4N-m max.
Wire gauge: 24-12AWG
DIN rail: TS35

Pin Out Specifications

110Vin models	
Pin	Single
1	N.C.
2	-Vin
3	+Vin
4	+ Vout
5	N.C.
6	- Vout

24 & 48 Vin models		
Pin	Single	Dual
1	On/Off Control	On/Off Control
2	-Vin	-Vin
3	+Vin	+Vin
4	+ Vout	+ Vout
5	NC	Common
6	- Vout	- Vout

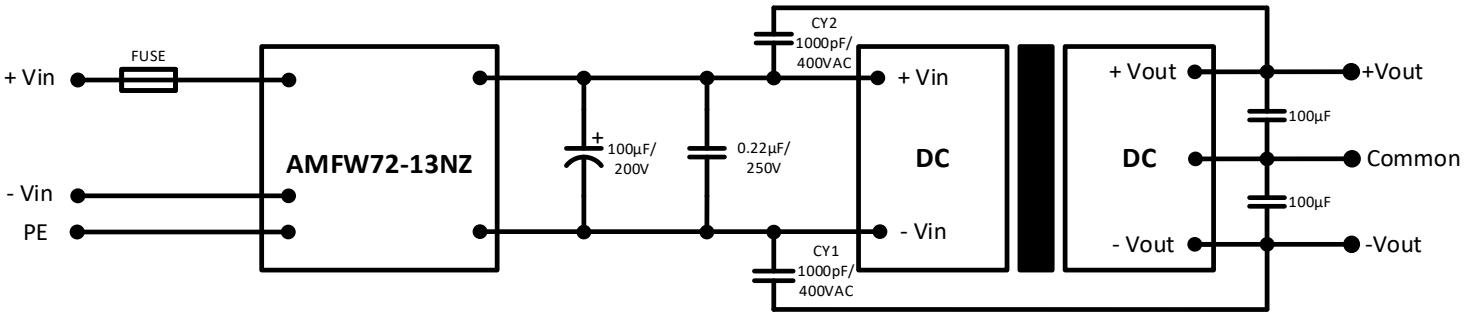
110Vin single output models with -K-STD option



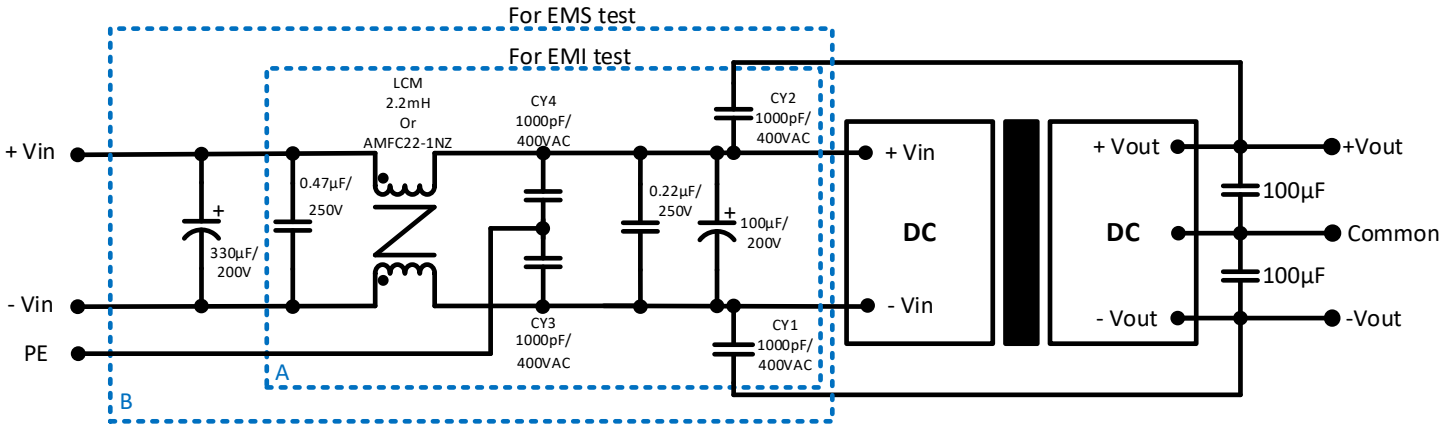
110Vin models	
Pin	Single
1	N.C.
2	-Vin
3	+Vin
4	+ Vout
5	N.C.
6	- Vout

Dimensions: mm (inch)
General Tolerance: ±0.50 (0.02)
Tightening torque: 0.4N-m max.
Wire gauge: 24-12AWG
DIN rail: TS35

Recommended EMC circuit 1 (110Vin dual output models)

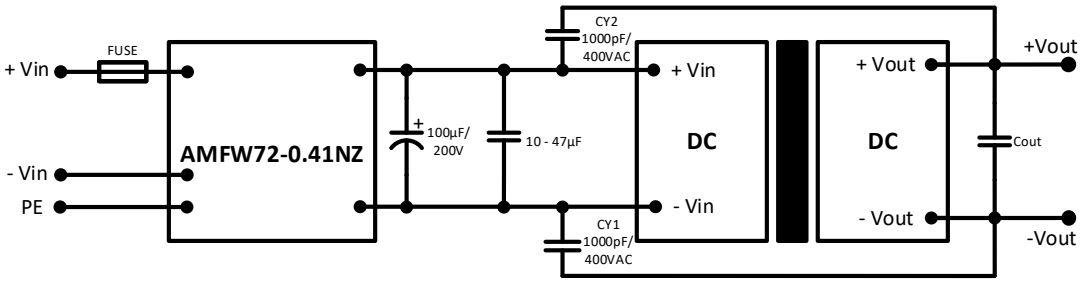


Recommended EMC circuit 2 (110Vin dual output models)



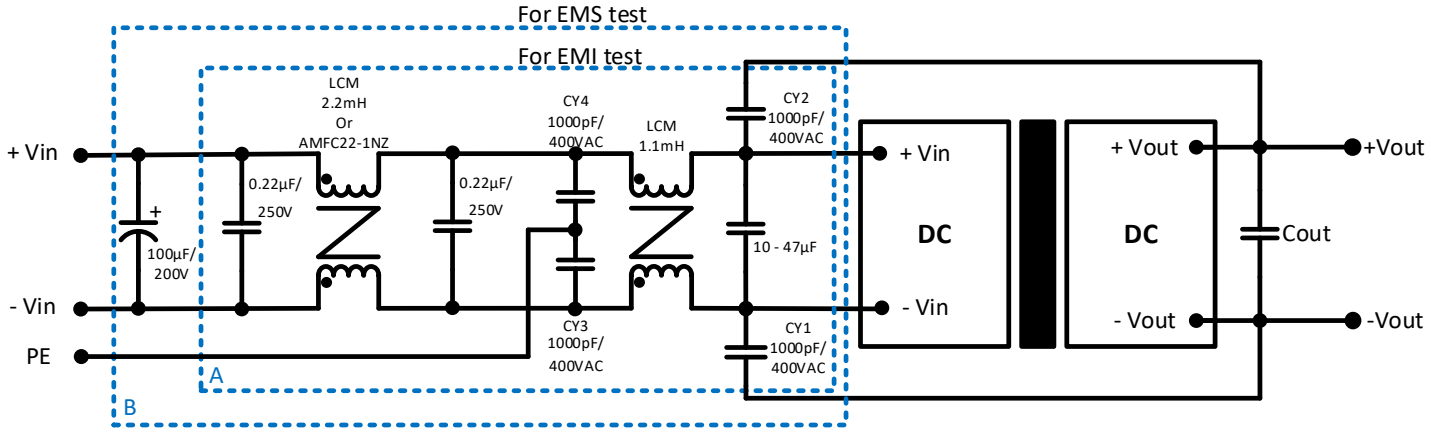
Notes:Part A for EMI filtering and Part B is used for EMS filtering.

Recommended EMC circuit 3 (110Vin single output models)



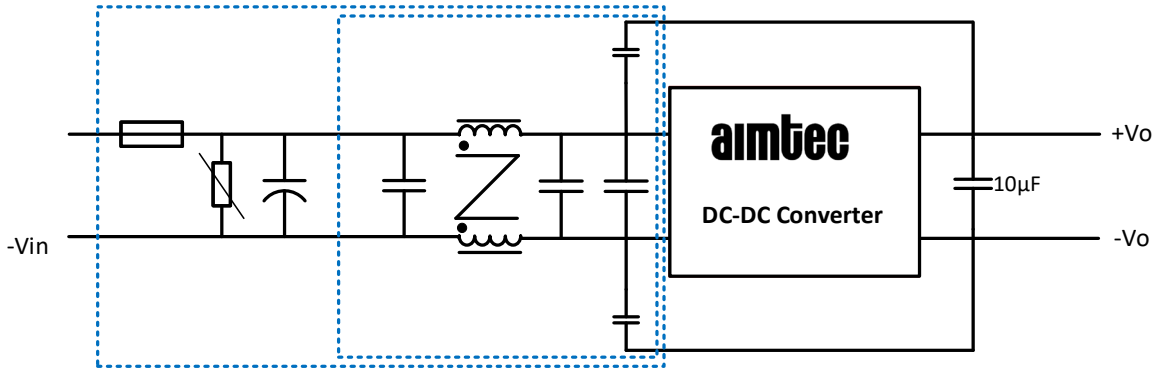
Vout	Cout
3.3 / 5	100µF
12 / 15	47µF
24	22µF

Recommended EMC circuit 4 (110Vin single output models)



Notes:Part A for EMI filtering and Part B is used for EMS filtering.

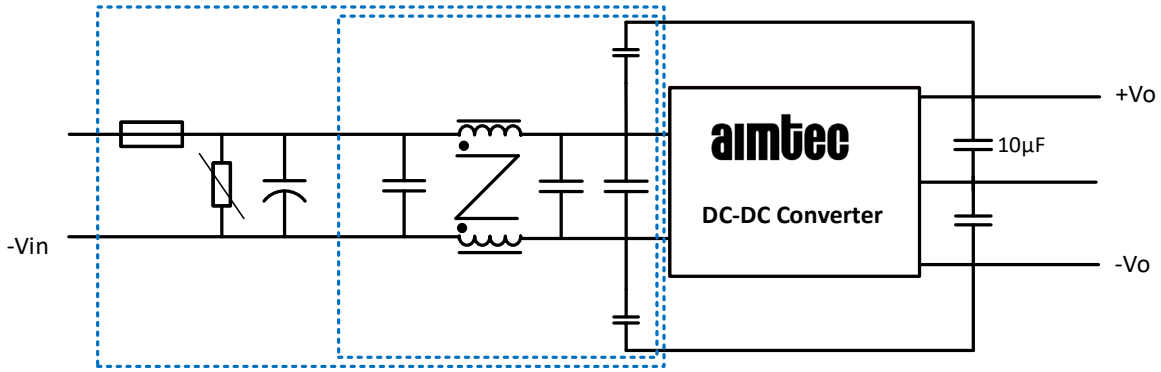
Recommended EMC circuit 5
24 & 48 Vin single output models



Notes:Part A for EMI filtering and Part B is used for EMS filtering.

Vin	MOV	C1	C2	C3	C4	LCM
24V	S20K30	680 µF / 50V	1 µF / 50V	330 µF / 50V	4.7 µF / 50V	4.7mH or AMFC47-3NZ
48V	S14K60	680 µF / 100V	1 µF / 100V	330 µF / 100V	4.7 µF / 100V	6.8mH

24 & 48 Vin dual output models



Notes:Part A for EMI filtering and Part B is used for EMS filtering.

Vin	MOV	C1	C2	C3	C4	LCM
24V	S20K30	680 µF / 50V	1 µF / 50V	330 µF / 50V	4.7 µF / 50V	4.7mH or AMFC47-3NZ
48V	S14K60	680 µF / 100V	1 µF / 100V	330 µF / 100V	4.7 µF / 100V	4.7mH or AMFC47-3NZ