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AM20CW-LPZ

1” x 1”

The AM20CW-LPZ is a 20W DC/DC converter that offers a regulated output which contributes to a more stable and reliable output performance. It features a wide 4:1 input voltage range of 9-75VDC, which will benefit your new system design.

This series offers great operating temperatures, from -40°C to 85°C. Furthermore, an isolation of 1500VDC, a high MTBF of 1,000,000h, continuous output short circuit protection (OSCP), over-current protection (OCP), over-voltage protection (OVP), and under voltage lock-out (UVLO) come standard with the series.

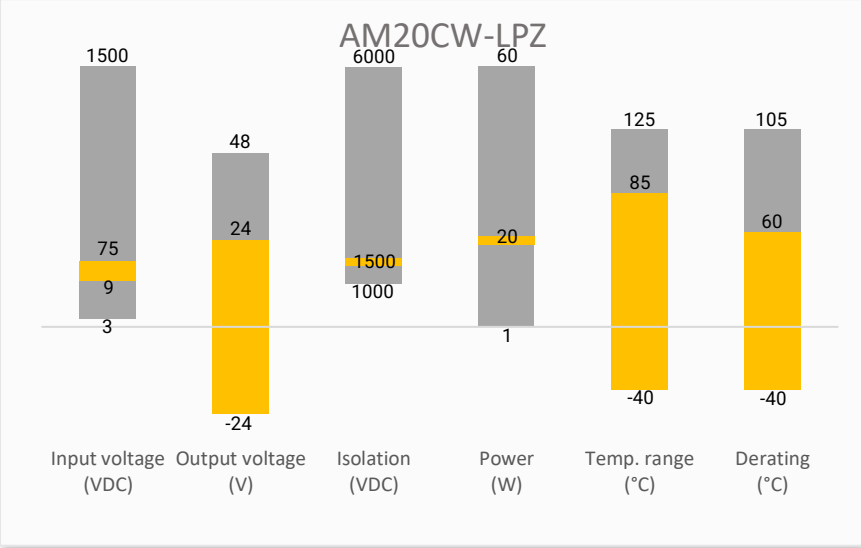
The AM20CW-LPZ is suitable for distributed power supply systems, industrial controls, power grid, instruments, and communications applications.

Features

- Operating Temp: -40 °C to +85 °C
- High isolation voltage: 1500VDC
- Low ripple & noise, 100mV (p-p), typ.
- Regulated Output
- 1” x 1” package
- Output short circuit, over-current, over-voltage, input under voltage protection

RoHS 3yr Warranty CE

Summary



Training

Product Training Video (click to open)

Press Release

Coming Soon!

Application Notes

Applications

Power Grid | Industrial | Telecom | Instrumentation

Models & Specifications

Single Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current (mA TYP)		Output Current Max (mA) Full Load	Maximum Capacitive Load (µF)	Efficiency Full Load Typ. (%)
			No Load	Full Load			
AM20CW-2403SLPZ	24 (9-36)	3.3	35	920	5000	10000	88
AM20CW-2405SLPZ	24 (9-36)	5	35	920	4000	10000	90
AM20CW-2406SLPZ	24 (9-36)	6	35	920	3333	10000	89
AM20CW-2412SLPZ	24 (9-36)	12	35	920	1667	1600	90
AM20CW-2415SLPZ	24 (9-36)	15	35	920	1333	1000	91
AM20CW-2424SLPZ	24 (9-36)	24	35	920	833	500	91
AM20CW-4803SLPZ	48 (18-75)	3.3	20	460	5000	10000	88
AM20CW-4805SLPZ	48 (18-75)	5	20	460	4000	10000	90
AM20CW-4812SLPZ	48 (18-75)	12	20	460	1667	1600	91
AM20CW-4815SLPZ	48 (18-75)	15	20	460	133.3	1000	91
AM20CW-4824SLPZ	48 (18-75)	24	20	460	833	500	91

Dual Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Max (mA)		Output Current Max (mA) Full Load	Maximum Capacitive Load (µF)	Efficiency (%) Full Load Typ.
			No Load	Full Load			
AM20CW-2405DLPZ	24 (9-36)	±5	35	920	±2000	2000	87
AM20CW-2412DLPZ	24 (9-36)	±12	35	920	±833	800	90
AM20CW-2415DLPZ	24 (9-36)	±15	35	920	±667	600	90
AM20CW-2424DLPZ	24 (9-36)	±24	35	920	±417	300	89
AM20CW-4805DLPZ	48 (18-75)	±5	20	460	±2000	2000	86
AM20CW-4812DLPZ	48 (18-75)	±12	20	460	±833	800	90
AM20CW-4815DLPZ	48 (18-75)	±15	20	460	±667	600	90
AM20CW-4824DLPZ	48 (18-75)	±24	20	460	±417	300	90

Input Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage Types			4:1	
Filter	PI filter			
Absolute maximum rating	24Vin models, 1 sec.		-0.7~50	VDC
	48Vin models, 1 sec.		-0.7~100	VDC
Input reflected current		30		mA
Input Under Voltage turn off	24Vin models	5.5~6.5		VDC
	48Vin models	12~15.5		VDC
Startup Voltage	24Vin models		9	VDC
	48Vin models		18	VDC
Startup time		10		ms
Remote On/Off control	ON - open or pulled high (3.5 - 12 VDC) OFF - pulled low to GND (0 - 1.2 VDC), idle current 7mA max.			

Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested isolation voltage	Input / output 60 sec, ≤ 1mA	1500		VDC
Resistance	500VDC	≥1000		MΩ
Capacitance	Input / output, 100KHz/0.1V	2000		pF

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage Tolerance	5% to 100% load	±1	±3	%
Line regulation	Full load, LL to HL	±0.2	±0.5	%
	Full load, LL to HL, dual 2nd output	±0.5	±1	%
Load regulation	5% to 100% load	±0.5	±1	%
Cross Regulation	50% at 1st output, 10-100% at 2nd output		±5	%
Voltage adjustment			±10	%
Transient recovery time	25% load step change	300	500	µs
Transient recovery deviation	3.3/5/6VDC single output, 25% load step change	±5	±8	%
	Others, 25% load step change	±3	±5	%
Ripple & Noise	20MHz bandwidth, single output	50	100	mV pk-pk
	20MHz bandwidth, dual output	100	200	mV pk-pk

General Specifications

Parameters	Conditions	Minimum	Typical	Maximum	Units
Switching frequency	100% load		300		KHz
Over Current protection	Input voltage range	110	150	200	%Io
Over voltage protection	Input voltage range	110		160	%Vo
Short circuit protection	Continuous, Auto recovery				
Operating temperature	With derating	-40		85	°C
Storage temperature		-55		125	°C
Temperature coefficient	100% Load			± 0.03	%/°C
Maximum soldering temperature	1.5mm from case for 10 sec.			300	°C
Cooling	Free air convection				
Humidity	Non-condensing	5		95	% RH
Case material	Aluminum alloy				
Weight			21		g
Dimensions (L x W x H)	1.00 x 1.00 x 0.47 inches (25.40 × 25.40 × 12.00 mm)				
MTBF	> 1 000 000 hrs (MIL-HDBK -217F, t=+25°C)				

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.

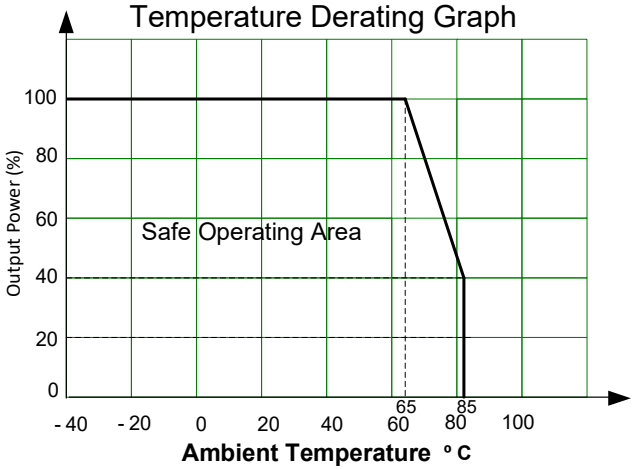
Safety Specifications

Parameters		
Standards	Designed to meet IEC/UL/EN62368-1	
	EMI - Conducted and radiated emission	CISPR32/EN55032, Class B (with the recommended EMC circuit)
	Electrostatic Discharge Immunity	IEC/EN 61000-4-2

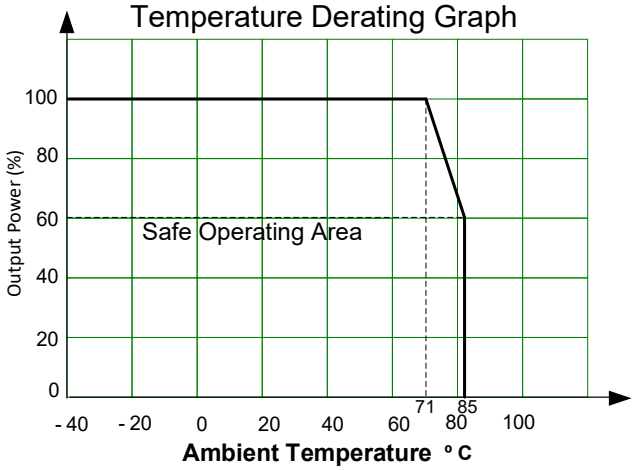
	RF, Electromagnetic Field Immunity	IEC/EN 61000-4-3
	Electrical Fast Transient/Burst Immunity	IEC/EN 61000-4-4
	Surge Immunity	IEC/EN 61000-4-5
	RF, Conducted Disturbance Immunity	IEC/EN 61000-4-6
	Vibration	IEC/EN61373, category 1/grade B

Derating

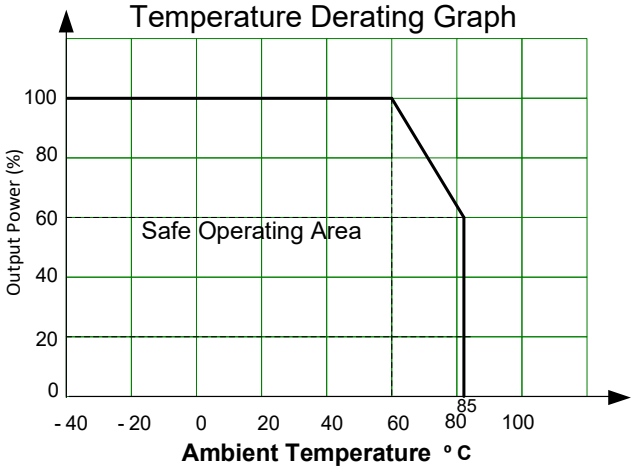
3.3/5/6Vout models



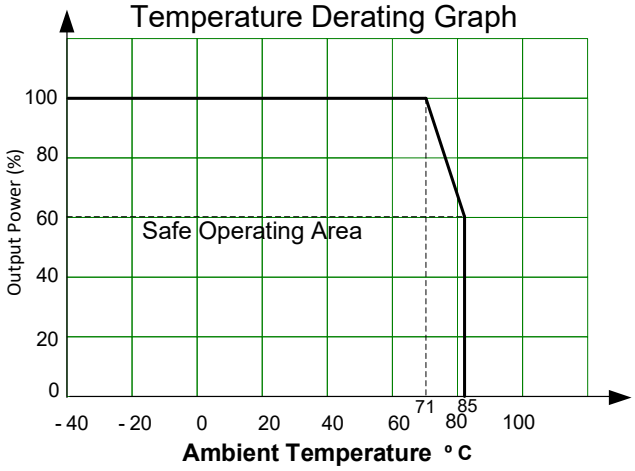
12/15/24Vout models



±5Vout models

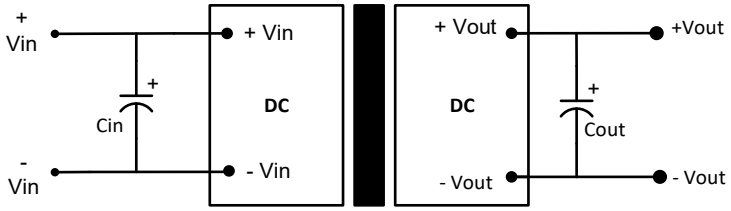


±12/±15/±24Vout models



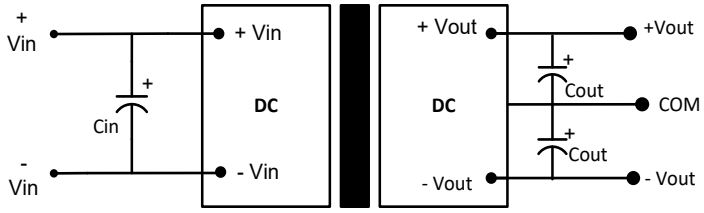
Typical Application Circuit

Single

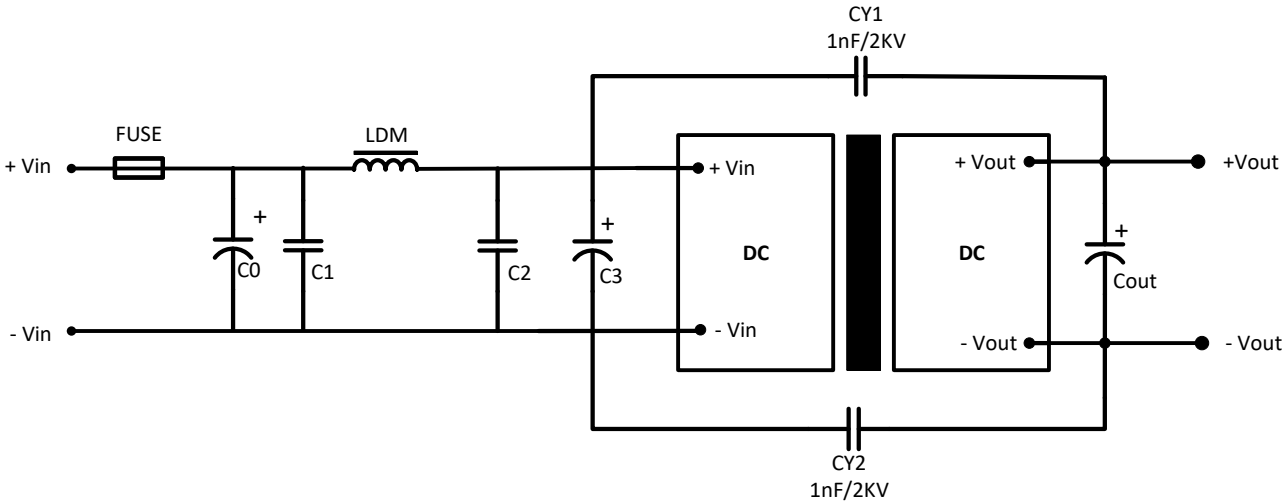


Vin	Cin	Cout
24VDC	100μF/50V	10μF
48VDC	10-47μF/100V	10μF

Dual



Recommended EMC Circuit

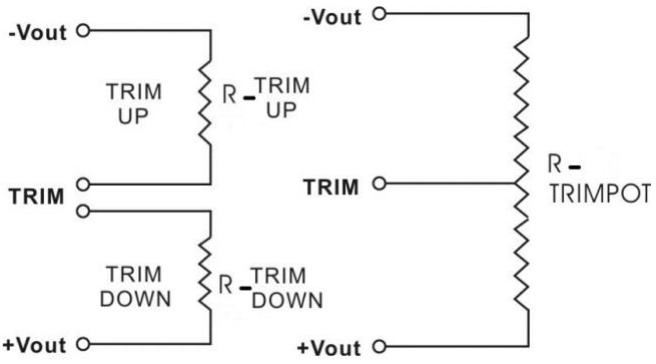


Component	24Vin	48Vin
C0, C3	330μF, 50V	330μF, 100V
C1, C2	4.7μF, 50V	4.7μF, 100V
Cout	10μF	10μF
LDM	2.2μH, 4A	2.2μH, 2A

Trimming

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

Fixed Resistor **Variable Potentiometer**



Leave open if not used.

3.3V Output

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)	441.214	242.889	163.186	120.180	93.270	74.844	61.436	51.242	43.230	36.767
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	3.630
Rt up (KΩ)	563.629	215.088	128.984	89.980	67.729	53.347	43.286	35.853	30.137	25.605

5V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	4.950	4.900	4.850	4.800	4.750	4.700	4.680	4.600	4.550	4.500
Rt down (KΩ)	39.966	22.440	13.270	7.631	3.813	1.056	0.156	--	--	--
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.060	5.100	5.150	5.200	5.250	5.300	5.350	5.400	5.450	5.500
Rt up (KΩ)	21961.378	135.361	52.843	29.152	17.912	11.350	7.048	4.011	1.752	0.006

12V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	11.880	11.760	11.640	11.520	11.400	11.280	11.160	11.040	10.920	10.800
Rt down (KΩ)	525.855	272.916	179.060	130.111	100.061	79.736	65.073	53.995	45.330	38.368
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	12.120	12.240	12.360	12.480	12.600	12.720	12.840	12.960	13.080	13.200
Rt up (KΩ)	190.983	76.518	43.233	27.375	18.096	12.007	7.703	4.500	2.023	0.050

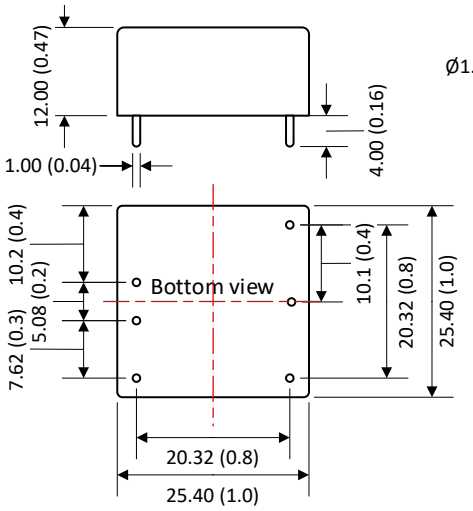
15V Output

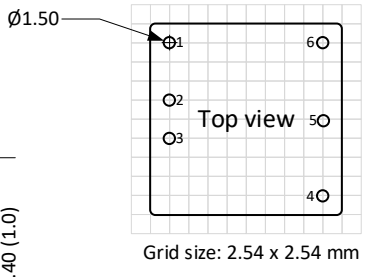
Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	14.850	14.700	14.550	14.400	14.250	14.100	13.950	13.800	13.650	13.500
Rt down (KΩ)	675.367	382.496	260.958	194.429	152.455	123.560	102.455	86.363	73.689	63.447
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.150	15.300	15.450	15.600	15.750	15.900	16.050	16.200	16.350	16.490
Rt up (KΩ)	323.076	105.467	56.466	34.831	22.640	14.818	9.373	5.365	2.291	0.004

24V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	23.760	23.520	23.280	23.040	22.800	22.560	22.320	22.080	21.840	21.600
Rt down (KΩ)	635.592	358.741	246.163	185.102	146.779	120.487	101.330	86.750	75.282	66.025
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.240	24.480	24.720	24.960	25.200	25.440	25.680	25.920	26.160	26.400
Rt up (KΩ)	154.790	53.216	28.902	17.987	11.787	7.790	4.999	2.939	1.357	0.104

Dimensions





Note:
Unit: mm (inch)
Pin tolerance: ±0.05 (0.002)
General tolerance: ±0.5 (0.02)

Pin Out Specifications		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-V Input	-V Input
3	+V Input	+V Input
4	+V Output	+V Output
5	Trim	Com
6	-V Output	-V Output