



### ■ FEATURES

- Industrial standard DIP-24 package
- Wide 4:1 input voltage range
- Safety meets IEC60601-1 for 2xMOPP
- Creepage and clearance > 8mm
- Low leakage current
- Over load protection
- Under voltage protection
- Short circuit protection

### ■ APPLICATIONS

- Medical devices
- Medical oxygen monitor
- CT scanning
- Medical carts
- Oral care equipment

### ■ DESCRIPTION

The CMW series is a medical grade regulated 3~6 Watts DC/DC converter in DIP-24 plastic package, with wide 4:1 input voltage range, and optionally with an external control pin. It features reinforced isolation system of 4.2K VAC isolation and very low leakage current less than 5 $\mu$ A. Its medical safety meets IEC60601-1 for 2xMOPP (Means of Patient Protection) and 8mm creepage and clearance.

### ■ MODEL ENCODING

CMW	S	-	12	05	C	6	T	R
Series Name	Output Quantity		Input Voltage	Output Voltage	Package	Output Power	Input Range	Function
	S : Single		12 : 9~36V	05 : 5V ; $\pm$ 5V		3 : 3W	T : 4:1	Blank : No pin
	D : Dual		24 : 18~75V	12 : 12V ; $\pm$ 12V		6 : 6W		R : Remote on/off
				15 : 15V ; $\pm$ 15V				

### ■ MODEL SELECTION TABLE(3W OUTPUT POWER)

MODEL NUMBER	INPUT				OUTPUT		EFF. (%)	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
CMWS-1205C3T(R)	12	9~36	20	313	5	600	80	330uF
CMWS-1212C3T(R)	12	9~36	20	313	12	250	80	47uF
CMWS-1215C3T(R)	12	9~36	20	313	15	200	80	47uF
CMWD-1205C3T(R)	12	9~36	20	313	±5	±300	80	±220uF
CMWD-1212C3T(R)	12	9~36	20	316	±12	±125	79	±47uF
CMWD-1215C3T(R)	12	9~36	20	316	±15	±100	79	±22uF
CMWS-2405C3T(R)	24	18~75	15	156	5	600	80	330uF
CMWS-2412C3T(R)	24	18~75	15	156	12	250	80	47uF
CMWS-2415C3T(R)	24	18~75	15	154	15	200	81	47uF
CMWD-2405C3T(R)	24	18~75	15	156	±5	±300	80	±220uF
CMWD-2412C3T(R)	24	18~75	15	156	±12	±125	80	±47uF
CMWD-2415C3T(R)	24	18~75	15	156	±15	±100	80	±22uF

Note: Efficiency and input current are measured at nominal input voltage and full load.

Other input to output voltages may be available. Please contact factory.

### ■ MODEL SELECTION TABLE(6W OUTPUT POWER)

MODEL NUMBER	INPUT				OUTPUT		EFF. (%)	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
CMWS-1205C6T(R)	12	9~36	20	625	5	1200	80	330uF
CMWS-1212C6T(R)	12	9~36	20	610	12	500	82	120uF
CMWS-1215C6T(R)	12	9~36	20	602	15	400	83	100uF
CMWD-1205C6T(R)	12	9~36	20	625	±5	±600	80	±330uF
CMWD-1212C6T(R)	12	9~36	20	617	±12	±250	81	±47uF
CMWD-1215C6T(R)	12	9~36	25	610	±15	±200	82	±47uF
CMWS-2405C6T(R)	24	18~75	15	313	5	1200	80	330uF
CMWS-2412C6T(R)	24	18~75	15	298	12	500	84	120uF
CMWS-2415C6T(R)	24	18~75	15	298	15	400	84	100uF
CMWD-2405C6T(R)	24	18~75	15	313	±5	±600	80	±330uF
CMWD-2412C6T(R)	24	18~75	15	308	±12	±250	81	±47uF
CMWD-2415C6T(R)	24	18~75	15	305	±15	±200	82	±47uF

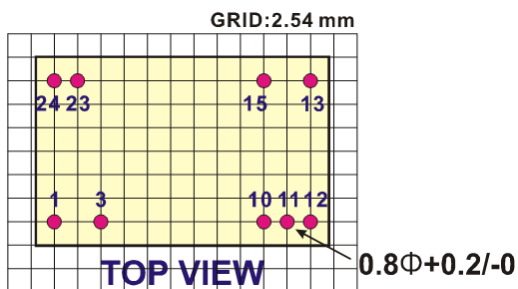
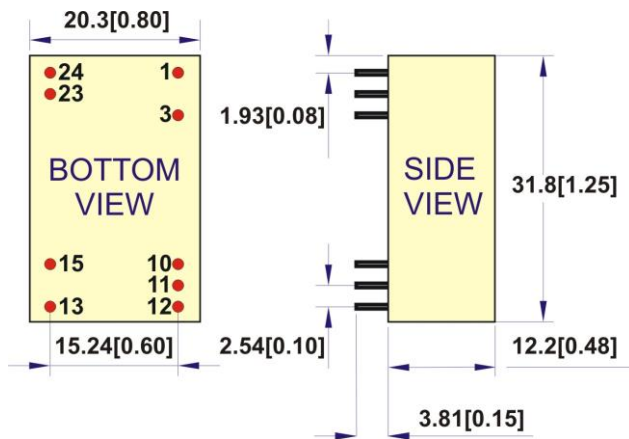
Note: Efficiency and input current are measured at nominal input voltage and full load.

Other input to output voltages may be available. Please contact factory.

### ■ SPECIFICATION

INPUT	Voltage Range	9~36V ; 18~75V		
	Surge Voltage(100ms max.)	12Vin models : 50Vdc ; 24Vin models : 100Vdc		
	Filter	Pi network		
	Protection	Fuse recommended (see page 7)		
	Remote ON/OFF Control	See page 5		
OUTPUT	Voltage Accuracy	±2% max.		
	Rated Power	3~6W		
	Ripple & Noise <sup>1</sup>	150mVp-p max.		
	Line Regulation <sup>2</sup>	±0.5%		
	Load Regulation <sup>3</sup>	±0.5%		
	Switching Frequency	250KHz typ.		
PROTECTION	Short Circuit	Protection type : continuous, automatic recovery		
	Overload	150% typ. Protection type : recovers automatically after fault condition is removed		
ENVIRONMENT	Cooling	Free-air convection		
	Working Temperature	-40~ +100°C (refer to “Derating Curve” )		
	Case Temperature	+105 °C max.		
	Working Humidity	5% ~ 95% RH non-condensing		
	Storage Temp., Humidity	-55 ~ +125°C, 10 ~ 95% RH non-condensing		
	Temperature Coefficient	0.05% / °C (0~71°C)		
	Soldering Temperature	1.5mm from case of 3~5 sec./265°C(max.)		
	Vibration	10~500Hz, 2G 10min./1cycle, period for 60 min. each along X, Y, Z axes		
SAFETY & EMC	Safety Standards	IEC60601-1(LVD)		
	Isolation Voltage	I/P-O/P : 6KVDC or 4.2KVAC		
	Isolation Resistance	I/P-O/P : 1000M Ohms / 500VDC / 25°C / 70% RH		
	Isolation Capacitance	20pF typ.		
	EMC Emission	<b>Parameter</b>	<b>Standard</b>	<b>Test Level / Note</b>
		Conducted	EN55011	N/A
		Radiated	EN55011	Class A
	EMC Immunity	<b>Parameter</b>	<b>Standard</b>	<b>Test Level / Note</b>
		ESD	EN61000-4-2	±15KV air
		Radiated Susceptibility	EN61000-4-3	10V/m
		EFT/Burst	EN61000-4-4	±2KV
		Surge	EN61000-4-5	±2KV Line-Line
		Conducted	EN61000-4-6	10Vrms(e.m.f.)
Magnetic		EN61000-4-8	30A/m	
OTHERS	MTBF <sup>4</sup>	>454,000Hours		
	Weight	17.0g typ.		
	Dimension(L*W*H)	31.8mm*20.3mm*12.2mm		
	Case Material	Non-conductive plastic		
NOTE	<p><sup>1</sup> Ripple &amp; noise are measured at 20MHz with 1uF ceramic capacitor connect to the output pins.</p> <p><sup>2</sup> High line to low line.</p> <p><sup>3</sup> Load regulation is for output load current change from 10% to 100%.</p> <p><sup>4</sup> MIL-HDBK-217F @25 °C, Ground Benign.</p> <p>*All specifications are measured at Ta=25°C, humidity &lt; 75%, nominal input voltage, and rated output load unless otherwise specified.</p>			

### MECHANICAL SPECIFICATION



PIN CONNECTION		
PIN	SINGLE	DUAL
1	+Vin	+Vin
3	NP*/Remote	NP*/Remote
10	NP	NP
11	NP	Common
12	-Vout	NP
13	+Vout	-Vout
15	NP	+Vout
23	-Vin	-Vin
24	-Vin	-Vin

NP : No pin

\*If Remote is not selected, there is no pin on corresponding number.

All dimensions are in mm[Inches]

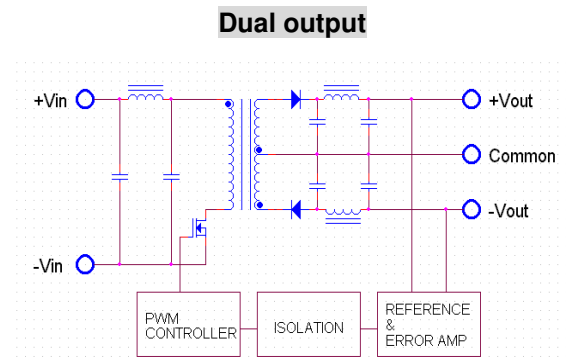
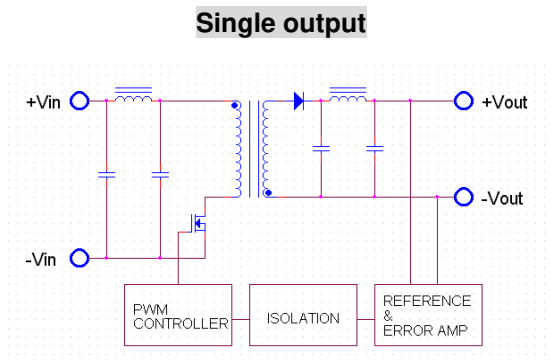
Pin size is 0.60Φ ±0.10mm

Tolerance .X or .XX= ±0.5mm

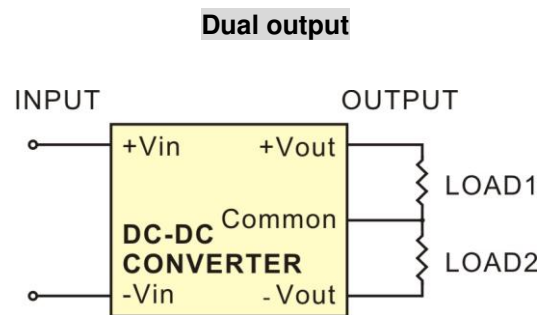
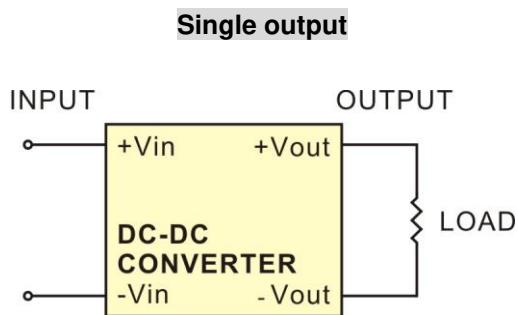
### REMOTE ON/OFF CONTROL

Control Input	PIN3	Control Common	PIN23&PIN24
Control Voltage		Converter Shutdown Idle Current	10mA
ON	>+2.5VDC or Open Circuit	Logic Compatibility	CMOS or Open
OFF	<+0.8VDC or Jumper to PIN23&PIN24		Collector TTL

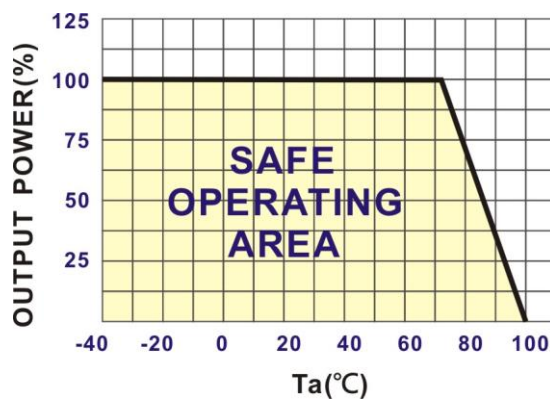
### ■ SIMPLIFIED SCHEMATIC



### ■ TYPICAL APPLICATIONS

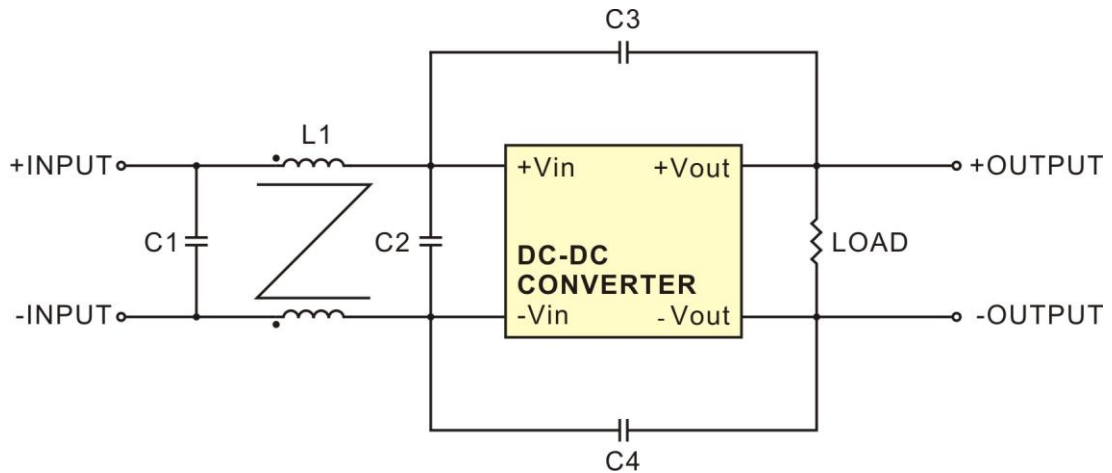


### ■ DERATING CURVE



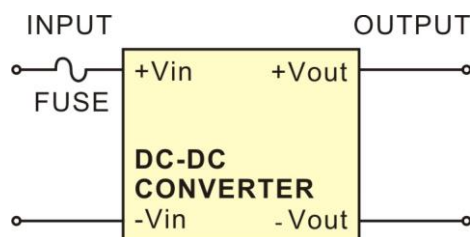
### RECOMMENDED FILTER FOR EN55011 CLASS B

The components used in the under figure, together with the manufacture's part numbers for these components, are as follows :



MODEL NUMBER	C1	C2	C3	C4	L1
CMWX-12XXCXT(R)	10uF/50V MLCC	10uF/50V MLCC	X	X	450uH Common Mode Choke
CMWX-24XXCXT(R)	4.7uF/100V MLCC	4.7uF/100V MLCC	X	X	450uH Common Mode Choke

### INPUT FUSE SELECTION GUIDE

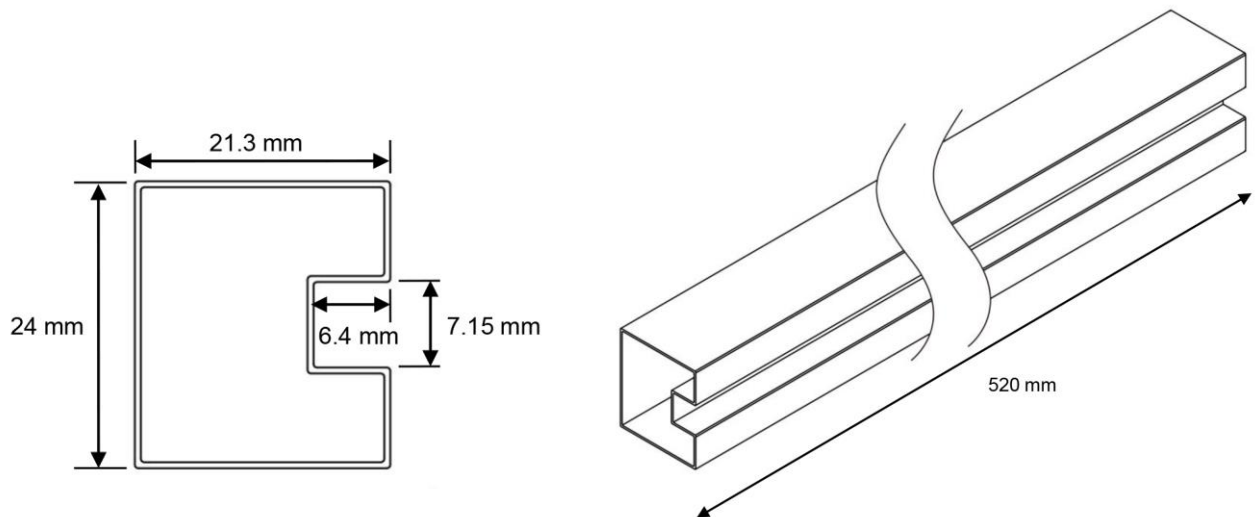


MODEL NUMBER	INPUT VOLTAGE(VDC)	FUSE
CMWX-12XXCXT(R)	9~36V	2A Slow-Blow Type
CMWX-24XXCXT(R)	18~75V	1A Slow-Blow Type

**Note:** Certain applications may require the installation of external fuse in front of the input.



### ■ PACKAGING INFORMATION



Packaging Quantity: 15 pcs converter per tube



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