



MI-ComPACTM DC-DC Switchers



50 – 300 Watts; 1 – 3 Outputs

Features & Benefits

- Inputs 28 and 270V_{DC}
- Transient protection: 28V_{DC} designed to meet MIL-STD-704A-F, MIL-STD-1275A/B/D and DO-160E
- One, two or three outputs
- Outputs: 2 48V_{DC}
- Up to 5W/in³
- High efficiency
- Remote sense
- ZCS power architecture
- Low noise FM control
- MIL-STD-461C/D/E EMI compliance

Product Description

The MI-ComPAC is a complete single, dual, or triple output DC-DC power supply that delivers up to 300W from inputs of 28 or $270V_{\rm DC}$.

The MI-ComPAC meets the conducted emissions and conducted susceptibility specifications of MIL-STD-461C/D/E and designed to meet the input transient, surge, and spike protection to the most severe levels of MIL-STD-1275, MIL-STD-704 and DO-160E.

Over/undervoltage lockout provides an additional safeguard against potentially damaging line conditions. The MI-ComPAC also features a overall disable.

Packaging Options

Conduction Cooled Models Available. Add "–CC" to the end of the part number. (Consult factory for details.)

Extended heat sink available add "-H1" to end of part number.

Configuration Chart

Configuration	Output Power	Number of Modules	Dimensions						
Single Output									
MI-LC •••••••	50 – 100W	1	8.6 x 2.5 x 0.99in [218,4 x 63,5 x 25,2mm]						
MI-MC •••••••	150 – 200W	2	8.6 x 4.9 x 0.99in [218,4 x 124,5 x 25,2mm]						
MI-NC •••••••	300W	3	8.6 x 7.3 x 0.99in [218,4 x 185,4 x 25,2mm]						
Dual Output									
MI-PC •.••.::	100 – 200W	2	8.6 x 4.9 x 0.99in [218,4 x 124,5 x 25,2mm]						
MI-QC ••••••••••••••••••••••••••••••••••••	200 – 300W	3	8.6 x 7.3 x 0.99in [218,4 x 185,4 x 25,2mm]						
Triple Output									
MI-RC ••••••••••••••••••••••••••••••••••••	150 – 300W	3	8.6 x 7.3 x 0.99in [218,4 x 185,4 x 25,2mm]						

Input Voltage

Nominal	Input Range Full Power				
2 = 28V	18 – 50V	16	60		
6 = 270V	125 – 400V	N/A	475		

Product Grade Case Temps. °C

Grade	Operating	Storage
I = −40 to +85		-55 to +100
M =	-55 to +85	-65 to +100

Output Power / Current

V _{OUT} ≥ 5V	V _{OUT} < 5V
Y = 50W	Y = 10A
X = 75W	X = 15A
W = 100W	W = 20A
V =	V = 30A

. Output Voltage

$Z = 2V^{[b]}$	1 = 12V
$Y = 3.3V^{[b]}$	P = 13.8V
0 = 5V ^[b]	2 = 15V
X = 5.2V	N = 18.5V
W = 5.5V	3 = 24V
V = 5.8V	L = 28V
$T = 6.5V^{[c]}$	J = 36V
$\mathbf{R} = 7.5 V^{[c]}$	K = 40V
M = 10V	4 = 48V

Output Power / Current

V _{OUT} ≥ 5V	V _{OUT} < 5V
V = 150W	V = 30A
U = 200W	U =
S = 300W	S = 60A

Output Power / Current

V _{OUT} ≥ 5V	V _{OUT} < 5V
S = 300W	S =
P =	P = 90A

[[]a] Brownout voltage for output power de-rated to 75% of maximum



[[]b] These units rated for 75% load from 125 to 150V: "V" power for "Z & Y" voltages, "W power for "0" voltages

^[c] 75W maximum module power for 28V input voltage

MI-ComPAC Specifications

Typical at $T_{BP} = 25$ °C, nominal line and 75% load, unless otherwise specified.

Input Specifications

Para	meter	Min	Тур	Max	Unit	Notes
28V _D	_C Input Modules					
	Steady-State Input	18	28	50	V_{DC}	
	Low-Line Lockout			17.5	V _{DC}	Automatic recovery
	Input Spike Limit	-250		+250	V_{DC}	70μs, 15mJ per MIL-STD-1275A/B/D
	Input Surge Limit			100	V_{DC}	50ms, 0.5 Ω per MIL-STD-1275A/B/D
	input surge Limit			80	V_{DC}	100ms per DO-160E, Section 16, Power Input, Category Z
	Overvoltage Shut Down	50			V_{DC}	100ms automatic recovery
	Recommended Fuse			10 ^[d]	А	F03A type
270\	/ _{DC} Input Modules					
	Steady-State Input	125	270	400	V_{DC}	
	Low-Line Lockout			125	V_{DC}	Automatic recovery
	Input Spike Limit			+800	V _{DC}	10μs, 50Ω
	input spike Limit	-600		+600	V_{DC}	100μs, 15mJ
	Input Surge Limit	-250		500	V_{DC}	100ms, 0.5Ω
	Overvoltage Shut Down	400			V _{DC}	100µs automatic recovery
	Recommended Fuse			2 ^[d]	А	F03A type
All N	lodels					
	No Load Power Dissipation		1.5 ^[d]	2 ^[d]	W	
	Overall Disable Input Current ^[e] (Absolute Maximum, 20mA)	4			mA	Sink; disables all outputs
	Inrush Current		110	125	%, I _{IN}	Steady state I _{IN} , 10ms

^[d] Per internal module configuration.

Output Specifications

Parameter	Min	Тур	Max	Unit	Notes
Set Point Accuracy		0.5	1.0	%V _{NOM}	
Load / Line Regulation		0.2	0.5	%V _{NOM}	LL to HL, NL to 10%
Load / Line Negalation		0.05	0.2	%V _{NOM}	LL to HL, 10% to FL
Output Temperature Drift		0.01	0.02	% / °C	
Output Noise, Peak-to-Peak		1.0	1.5	%V _{NOM}	
		100	150	mV	will chever is greater, 2014112 DVV
Output Voltage Trimming [f]	50		110	%V _{NOM}	
Remote Sense Compensation	0.5			V _{DC}	
OVP Set Point	115	125	135	%V _{NOM}	Latching
Current Limit	105		125	%I _{NOM}	Auto restart
Short-Circuit Current ^[g]	20		130	%I _{NOM}	

[[]f] 10, 12 and 15V outputs, standard trim range ±10%. Consult factory for wider trim range.

[g] Output ranges of 5V or less incorporate foldback current limiting, outputs of 10V and above incorporate straight-line current limiting.



[[]e] Multiply minimum x2 for 2-ups and x3 for 3-ups

MI-ComPAC Specifications (Cont.)

Typical at $T_{BP} = 25 \, ^{\circ}\text{C}$, nominal line and 75% load, unless otherwise specified.

Thermal Characteristics

Parameter	Min	Тур	Max	Unit	Notes
Efficiency		81		%	
Operating Temperature, Case			+85	°C	See product grade
Storage Temperature			+100	°C	See product grade
Shut-Down Temperature	+90	+95	+105	°C	Cool and recycle power to restart

Isolation Characteristics

Parameter	Min	Тур	Max	Unit	Notes
Input to Output	4242			V_{RMS}	1 minute
Input to Case					
28V _{DC} Input	2121			V_{RMS}	1 minute
270V _{DC} Input	2500			V_{RMS}	1 minute
Output to Case	500			V_{RMS}	1 minute

Mechanical Specifications

Parameter	Min	Тур	Max	Unit	Notes
Weight					
1-Up		1.2 [544]		lbs [g]	
2-Up		2.4 [1088]		lbs [g]	
3-Up		3.6 [1633]		lbs [g]	

EMC CHARACTERISTICS; MIL-STD-461C/D/E

Parameter	Notes	
Input Power Leads		
Conducted Emissions	CE01, CE03, CE07	MIL-STD-461C — 1-up
	CE101, CE102	MIL-STD-461D — 1-up
	CE101	MIL-STD-461E — 2-up & 3-up
Conducted Susceptibility	CS01, CS02, CS06	MIL-STD-461C — 1-up
	CS101, CS114, CS116	MIL-STD-461D — 1-up
	CS101, CS114, CS116	MIL-STD-461E — 2-up & 3-up



MI-ComPAC Specifications (Cont.)

Thermal Considerations

	Standard Units			With Optional Heat Sink [h]		
Parameter	1-Up	2-Up	3-Up	1-Up 2-Up 3-Up		
Thermal Impedance — Case-to-Air (°C / W)						
Free Air (Horizontal)	3.6	1.7	1.4	2.1 1.3 1.0		
Forced Convection Through Heat-Sink Fins						
50LFM	2.7	1.4	1.3	1.5 1.1 0.9		
100LFM	2.3	1.3	1.1	1.2 0.9 0.7		
250LFM	1.6	1.0	0.8	0.7 0.5 0.4		
500LFM	1.2	0.7	0.6	0.4 0.3 0.3		
750LFM	0.9	0.5	0.5	0.3 0.2 0.2		
1000LFM	0.8	0.4	0.4	0.2 0.2 0.2		

- Thermal impedance, chassis-to-air, is provided for 1-up, 2-up and 3-up MI-ComPAC package configurations as a function of airflow.
- Case temperature = (total power dissipated thermal impedance) + ambient temperature.
- Watts dissipated per output = (output power ÷ efficiency) output power.

^[h] To order optional heat sink add –H1 to part number.

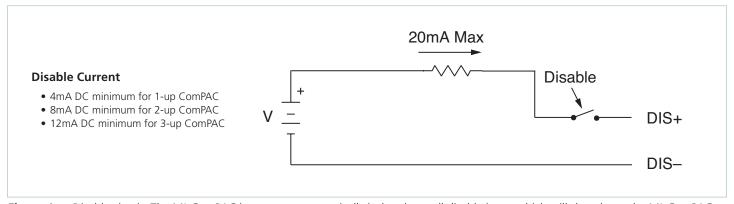


Figure 1 — Disable circuit; The MI-ComPAC incorporates an optically isolated overall disable input which will shut down the MI-ComPAC when a current is driven through the disable terminals

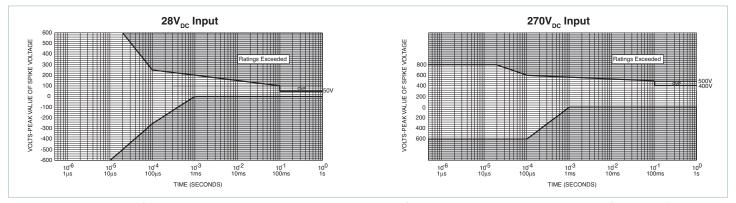
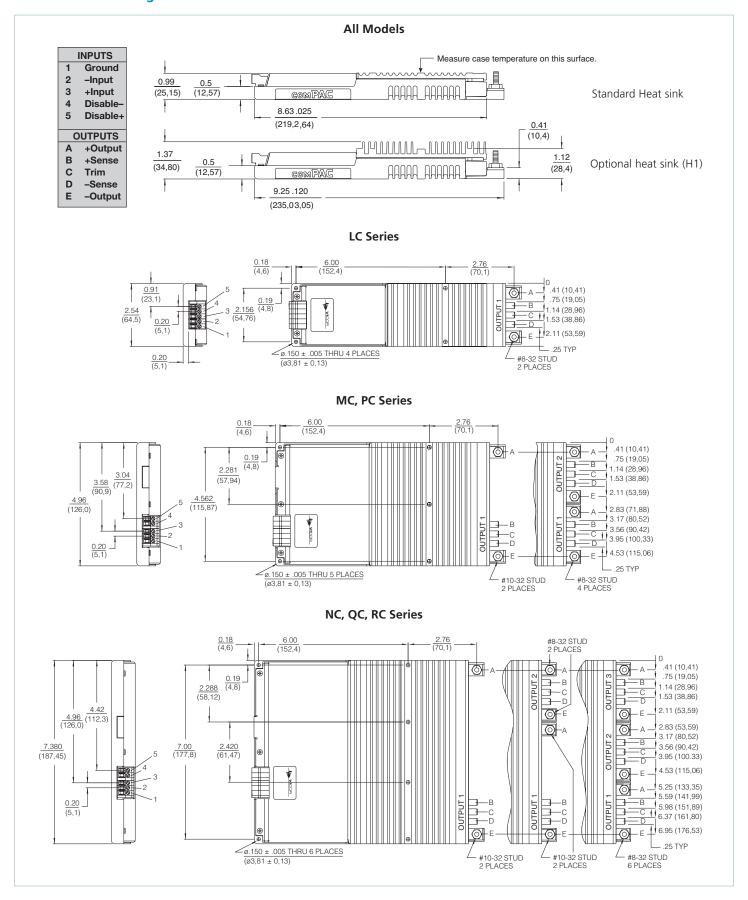


Figure 2 — Long term safe operating area curves; 1% duty cycle maximum, for short duration transient capability refer to specifications

Mechanical Drawings



Vicor's comprehensive line of power solutions includes high density AC-DC and DC-DC modules and accessory components, fully configurable AC-DC and DC-DC power supplies, and complete custom power systems.

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