



## 50 – 300 Watts; 1 – 3 Outputs

### Features & Benefits

- Inputs 28 and 270V<sub>DC</sub>
- Transient protection: 28V<sub>DC</sub> designed to meet MIL-STD-704A-F, MIL-STD-1275A/B/D and DO-160E
- One, two or three outputs
- Outputs: 2 – 48V<sub>DC</sub>
- Up to 5W/in<sup>3</sup>
- 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<sub>DC</sub>.

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
<b>Single Output</b>			
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]
<b>Dual Output</b>			
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]
<b>Triple Output</b>			
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	Brownout Voltage <sup>[a]</sup>	Transient (1s)
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 <sub>OUT</sub> ≥ 5V	V <sub>OUT</sub> < 5V
Y = 50W	Y = 10A
X = 75W	X = 15A
W = 100W	W = 20A
V = —	V = 30A

### Output Voltage

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

### Output Power / Current

V <sub>OUT</sub> ≥ 5V	V <sub>OUT</sub> < 5V
V = 150W	V = 30A
U = 200W	U = —
S = 300W	S = 60A

### Output Power / Current

V <sub>OUT</sub> ≥ 5V	V <sub>OUT</sub> < 5V
S = 300W	S = —
P = —	P = 90A

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

<sup>[b]</sup> These units rated for 75% load from 125 to 150V: “V” power for “Z & Y” voltages, “W” power for “0” voltages

<sup>[c]</sup> 75W maximum module power for 28V input voltage

## MI-ComPAC Specifications

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

## Input Specifications

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

<sup>[d]</sup> Per internal module configuration.

<sup>[e]</sup> Multiply minimum x2 for 2-ups and x3 for 3-ups

## Output Specifications

Parameter	Min	Typ	Max	Unit	Notes
Set Point Accuracy		0.5	1.0	%V <sub>NOM</sub>	
Load / Line Regulation		0.2	0.5	%V <sub>NOM</sub>	LL to HL, NL to 10%
		0.05	0.2	%V <sub>NOM</sub>	LL to HL, 10% to FL
Output Temperature Drift		0.01	0.02	% / °C	
Output Noise, Peak-to-Peak		1.0	1.5	%V <sub>NOM</sub>	Whichever is greater; 20MHz BW
		100	150	mV	
Output Voltage Trimming <sup>[f]</sup>	50		110	%V <sub>NOM</sub>	
Remote Sense Compensation	0.5			V <sub>DC</sub>	
OVP Set Point	115	125	135	%V <sub>NOM</sub>	Latching
Current Limit	105		125	%I <sub>NOM</sub>	Auto restart
Short-Circuit Current <sup>[g]</sup>	20		130	%I <sub>NOM</sub>	

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

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

## MI-ComPAC Specifications (Cont.)

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

### Thermal Characteristics

Parameter	Min	Typ	Max	Unit	Notes
Efficiency		81		%	
Operating Temperature, Case			+85	$^{\circ}\text{C}$	See product grade
Storage Temperature			+100	$^{\circ}\text{C}$	See product grade
Shut-Down Temperature	+90	+95	+105	$^{\circ}\text{C}$	Cool and recycle power to restart

### Isolation Characteristics

Parameter	Min	Typ	Max	Unit	Notes
Input to Output	4242			$V_{RMS}$	1 minute
Input to Case					
28V <sub>DC</sub> Input	2121			$V_{RMS}$	1 minute
270V <sub>DC</sub> Input	2500			$V_{RMS}$	1 minute
Output to Case	500			$V_{RMS}$	1 minute

### Mechanical Specifications

Parameter	Min	Typ	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

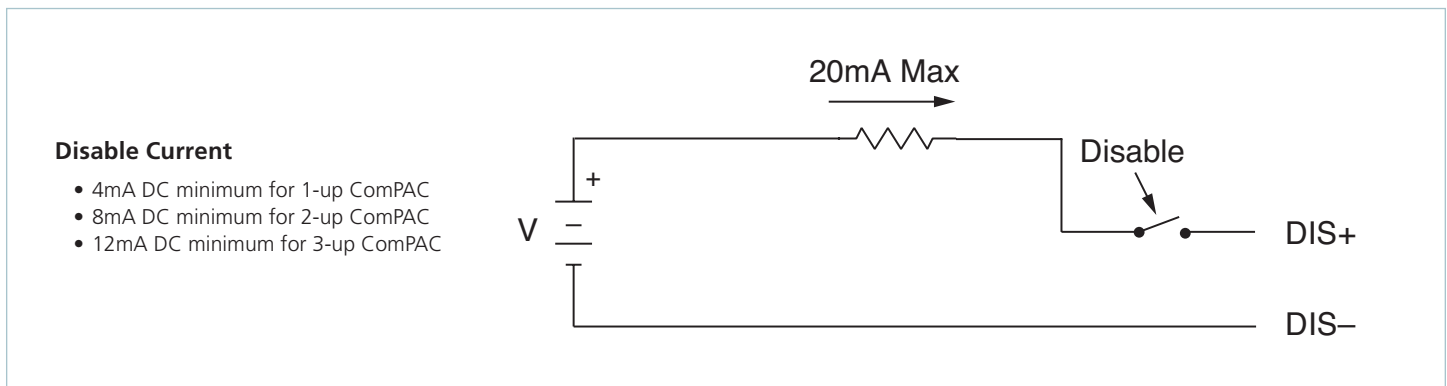
## MI-ComPAC Specifications (Cont.)

### Thermal Considerations

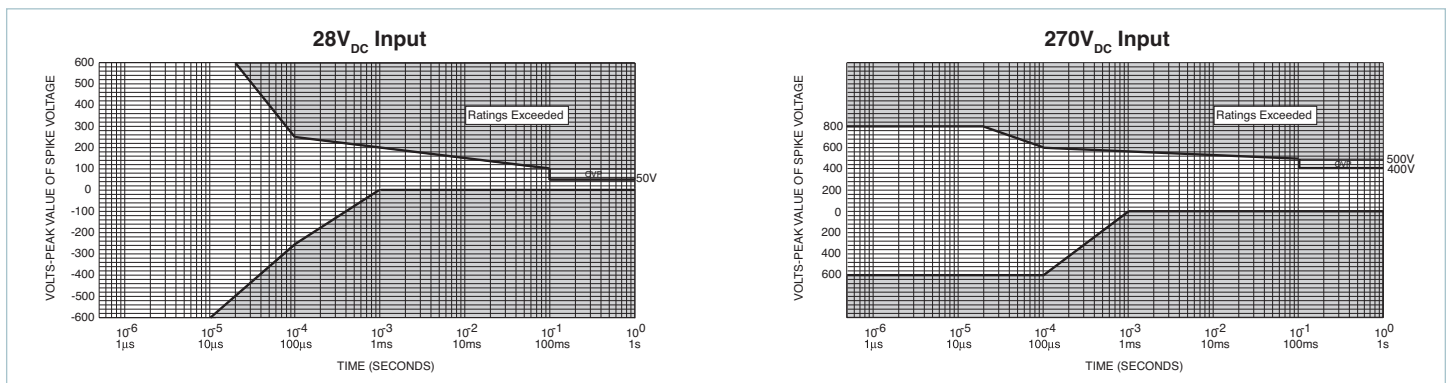
Parameter	Standard Units			With Optional Heat Sink <sup>[h]</sup>		
	1-Up	2-Up	3-Up	1-Up	2-Up	3-Up
Thermal Impedance — Case-to-Air (°C / W)						
Free Air (Horizontal)	3.6	1.7	1.4	2.1	1.3	1.0
Forced Convection Through Heat-Sink Fins						
50LFM	2.7	1.4	1.3	1.5	1.1	0.9
100LFM	2.3	1.3	1.1	1.2	0.9	0.7
250LFM	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.

<sup>[h]</sup> 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

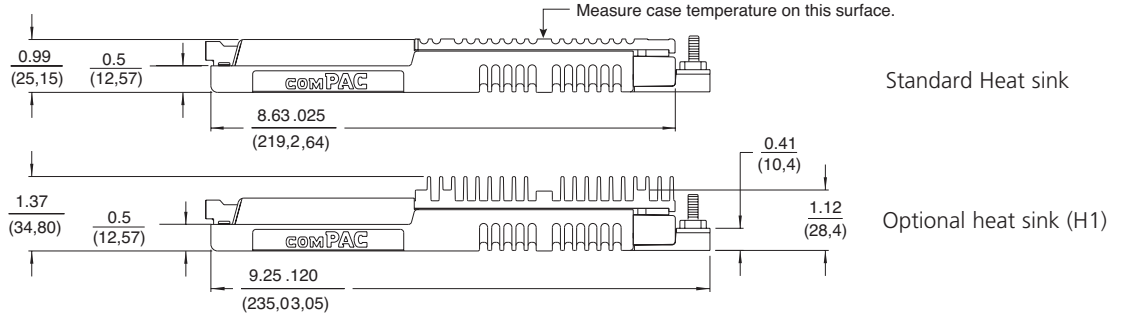


**Figure 2** — Long term safe operating area curves; 1% duty cycle maximum, for short duration transient capability refer to specifications

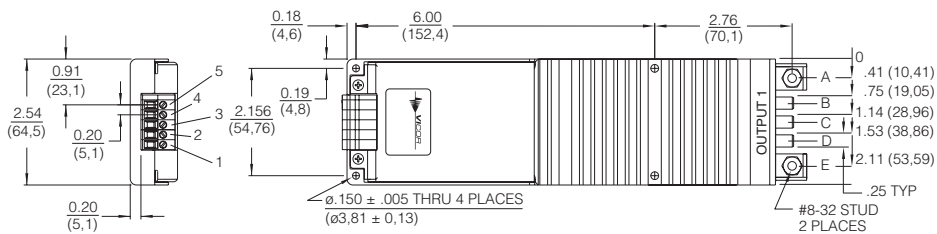
## Mechanical Drawings

INPUTS	
1	Ground
2	-Input
3	+Input
4	Disable-
5	Disable+
OUTPUTS	
A	+Output
B	+Sense
C	Trim
D	-Sense
E	-Output

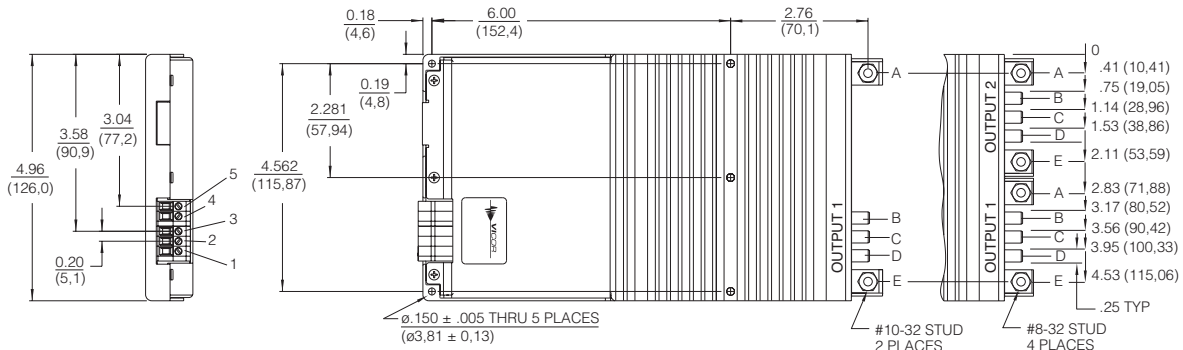
### All Models



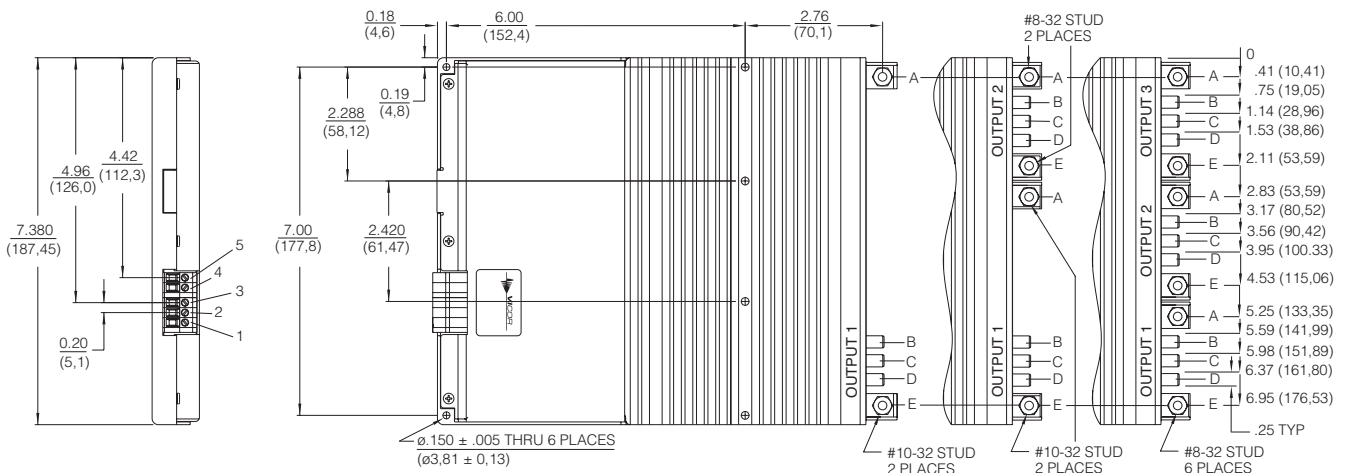
### LC Series



### MC, PC Series



### NC, QC, RC Series



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