



# Data Sheet

## ComPAC

### DC-DC Switchers

#### 50 to 600 Watts

#### 1 to 3 outputs



### Features

- RoHS Compliant (VE versions)
- Inputs 24, 48, and 300 Vdc
- Any output: 1 to 95 Vdc
- Input surge withstand:  
British Telecom BTR 2511,  
EN-61000-4-5
- Meets British Telecom BTR 2511,  
EN55022 Class B conducted  
emissions
- cULus, cTUVus (60950-1)
- CE marked
- 80 – 90% efficiency
- Up to 10 W/cubic inch
- Reverse polarity protected
- Master disable
- Overvoltage shutdown

### Product Highlights

ComPAC delivers up to 600 W from one, two, or three outputs in a package just 0.99" (25,2 mm) in height with the field proven performance, high efficiency and high reliability inherent in Vicor's component level power converters. ComPAC meets British Telecom and European norms for input surge withstand and meets conducted emissions of EN55022 Class B. ComPAC is offered with input voltage ranges optimized for industrial and telecommunication applications and provides extended input overvoltage capability, input reverse polarity protection, undervoltage lockout, and master 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.

### ComPAC Configuration Chart

Substitute VE- for VI- for RoHS compliant versions

Configuration	Output Power	# of Modules	Dimensions
<b>Single Output</b>			
VI-LC	50 – 200 W	1	8.6" x 2.5" x 0.99" (218,4 x 63,5 x 25,2 mm)
VI-MC	100 – 400 W	2	8.6" x 4.9" x 0.99" (218,4 x 124,5 x 25,2 mm)
VI-NC	300 – 600 W	3	8.6" x 7.3" x 0.99" (218,4 x 185,4 x 25,2 mm)
<b>Dual Output</b>			
VI-PC	100 – 400 W	2	8.6" x 4.9" x 0.99" (218,4 x 124,5 x 25,2 mm)
VI-QC	150 – 600 W	3	8.6" x 7.3" x 0.99" (218,4 x 185,4 x 25,2 mm)
<b>Triple Output</b>			
VI-RC	150 – 600 W	3	8.6" x 7.3" x 0.99" (218,4 x 185,4 x 25,2 mm)

### • Input Voltage

Nominal	Input Range Full Power	Maximum Power <sup>a</sup>	Low Line 75% Max. Power	Transient <sup>b</sup>
1 = 24 V	21 – 32 V	(1)	18	36
W = 24 V	18 – 36 V	(1)	n/a	n/a
3 = 48 V	42 – 60 V	(2)	41	72
N = 48 V	36 – 76 V	(2)	n/a	n/a
6 = 300 V	200 – 400 V	(2)	188	425

<sup>a</sup> Max. Output Per Module	5 V Outputs	>5 V Outputs	<5 V Outputs
(1)	150 W	150 W	30 A
(2)	200 W	200 W	40 A

<sup>b</sup> Transient voltage for one second

### • Output Voltage

Z = 2 V	2 = 15 V
Y = 3.3 V	N = 18.5 V
0 = 5 V	3 = 24 V
X = 5.2 V	L = 28 V
W = 5.5 V	J = 36 V
V = 5.8 V	K = 40 V
T = 6.5 V	4 = 48 V
R = 7.5 V	H = 52 V
M = 10 V	F = 72 V
1 = 12 V	D = 85 V
P = 13.8 V	B = 95 V

### •• Product Grade Temps. °C

Grade	Operating	Storage
E =	-10 to +85	-20 to +100
C =	-25 to +85	-40 to +100
I =	-40 to +85	-55 to +100
M =	-55 to +85	-65 to +100

Temperatures apply to product case.

### ••• Output Power/Current

V <sub>OUT</sub> ≥ 5 V	V <sub>OUT</sub> < 5 V
Y = 50 W	Y = 10 A
X = 75 W	X = 15 A
W = 100 W	W = 20 A
V = 150 W	V = 30 A
U = 200 W	U = 40 A

### •••• Output Power/Current

V <sub>OUT</sub> ≥ 5 V	V <sub>OUT</sub> < 5 V
W = 100 W	W = 20 A
V = 150 W	V = 30 A
U = 200 W	U = 40 A
S = 300 W	S = 60 A
Q = 400 W	Q = 80 A

### ••••• Output Power/Current

V <sub>OUT</sub> ≥ 5 V	V <sub>OUT</sub> < 5 V
S = 300 W	S = 60 A
P = 450 W	P = 90 A
M = 600 W	M = 120 A

## COMPAC SPECIFICATIONS

(typical at  $T_{BP} = 25^{\circ}\text{C}$ , nominal line and 75% load, unless otherwise specified,  $V_{NOM}$  is factory set output voltage and  $I_{NOM}$  is maximum rated output current.)

### INPUT SPECIFICATIONS

Parameter	E-Grade			C-, I-, M-Grade			Unit	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
24 V	21	24	32	21	24	32	Vdc	See Fusing Information on Page 3
24 V Wide	18	24	36	18	24	36	Vdc	
48 V	42	48	60	42	48	60	Vdc	
48 V Wide	36	48	76	36	48	76	Vdc	
300 V	200	300	400	200	300	400	Vdc	
No load power dissipation <sup>a</sup>	1.35		2	1.35		2	Watts	
Master disable input current <sup>a</sup> (Absolute max., 20 mA)	4			4			mA	Sink or source to disable optocoupler (See <a href="#">Section 18</a> CompPAC Technical Description in VI-200/VI-J00 Applications Manual)
Quiescent Input current logic disable <sup>a</sup>		7	10		7	10	mA	Current drawn from source when disabled
Reverse polarity protection								No damage to unit with external fuse

<sup>a</sup> For MC, PC series, multiply value by 2; for NC, QC, RC series, multiply value by 3.

### OUTPUT SPECIFICATIONS (Applies to each output individually)

Parameter	E-Grade			C-, I-, M-Grade			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Set point accuracy		1%	2%		0.5%	1%	$V_{NOM}$	
Load / line regulation			0.5%		0.05%	0.2%	$V_{NOM}$	LL to HL, 10% to full load
Load / line regulation			1%		0.2%	0.5%	$V_{NOM}$	LL to HL, no load to full load
Output temperature drift		0.02			0.01	0.02	$\%/^{\circ}\text{C}$	Over rated temperature range
Long term drift		0.02			0.02		$\%/1\text{ k hrs.}$	
Output ripple								
2 V, 3.3 V			150		60	100	mVp-p	20 MHz bandwidth
5 V			250		100	150	mVp-p	20 MHz bandwidth
10 – 48 V			3%		0.75%	1.5%	$V_{NOMP-p}$	20 MHz bandwidth
Output voltage trimming <sup>a</sup>	50%		110%	50%		110%	$V_{NOM}$	
Total remote sense compensation <sup>a</sup>	0.5			0.5			Volts	0.25 V maximum allowable drop in –Out lead
OVP set point		125%		115%	125%	135%	$V_{NOM}$	Recycle power to restart
Current limit	105%		135%	105%		125%	$I_{NOM}$	Automatic restart
Short circuit current <sup>b</sup>	20%		140%	20%		130%	$I_{NOM}$	

<sup>a</sup> 10 V, 12 V and 15 V outputs, trim range  $\pm 10\%$ . Consult factory for wider trim range.

<sup>b</sup> Output voltages of 5 V or less incorporate foldback current limiting, outputs greater than 5 V incorporate straight line current limiting.

## CONFIGURABLE SPECIFICATIONS (Cont.)

### ■ THERMAL CHARACTERISTICS

Parameter	E-Grade			C-, I-, M-Grade			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Efficiency	78 – 88%			80 – 90%				for 5 V outputs and higher
Shut down temp. — case <sup>a</sup>	90	95	105	90	95	105	°C	Cool and recycle power to restart
Operating temp. — case	85			85			°C	See Thermal Curves

<sup>a</sup> Shut down temperature threshold is above maximum operating temperature. For over temperature protection, external means of disable should be employed below maximum operating temperature.

### ■ ISOLATION CHARACTERISTICS

Parameter	E-Grade			C-, I-, M-Grade			Unit	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Isolation								
Input to output	4,242			4,242			Vdc	
Output to case	707			707			Vdc	
Input to case	2,121			2,121			Vdc	

### ■ MECHANICAL SPECIFICATIONS

Parameter	E-Grade			C-, I-, M-Grade			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Weight <sup>a</sup>	19.2			19.2			Ounces	
	544			544			Grams	

<sup>a</sup> For MC, PC series, multiply value by 2; for NC, QC, RC series, multiply value by 3.

### ■ FUSING INFORMATION

Input Voltage	24 V	48 V	300 V
LC series (200 W)	10 A	7 A	2 A
MC, PC series (400 W)	20 A	15 A	4 A
NC, QC, RC series (600 W)	35 A	25 A	6 A

## CONFIGURABLE SPECIFICATIONS (Cont.)

### ■ AGENCY APPROVALS

Safety Standards	Markings	Notes
UL1604 UL / CSA / EN / IEC 60950-1	cULus, cTUVus, CE Marked	Low Voltage Directive

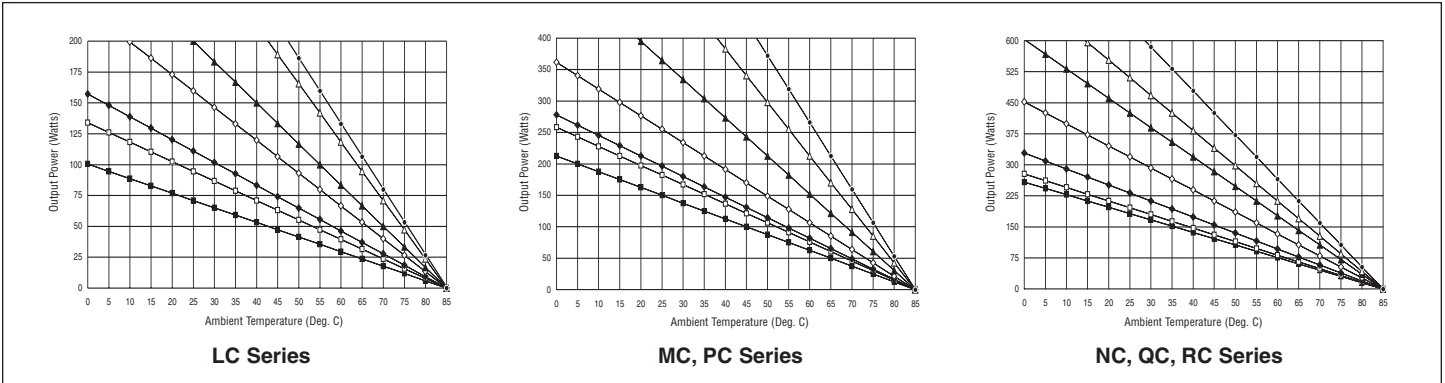
### ■ EMI/EMC Characteristics (Performed on selected samples representative of the ComPac product family.)

Parameter	Notes
Input surge withstand IEC 61000-4-5 level 2	(Up to 200 mS, $Z_S = .5 \Omega$ , no interruption of performance, see: Long Term Safe Operating Area Curves, pg 6)
Conducted Emissions British Telecom BTR 2511, Issue 2 EN 55022, class B	
ESD IEC 61000-4-2 level 4	

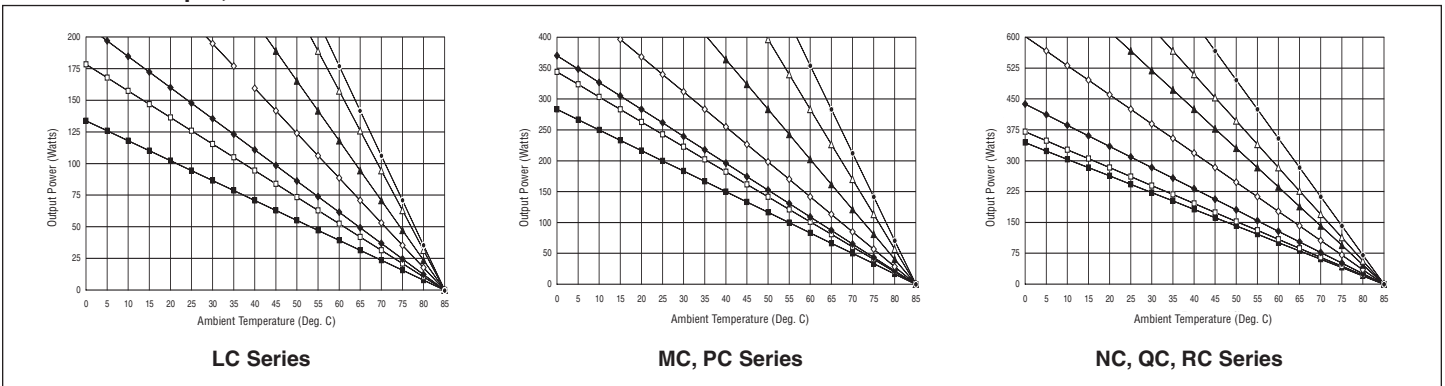
# THERMAL CURVES

■ FREE AIR   
 □ 50 LFM   
 ◆ 100 LFM   
 ◇ 250 LFM   
 ▲ 500 LFM   
 △ 750 LFM   
 ● 1000 LFM

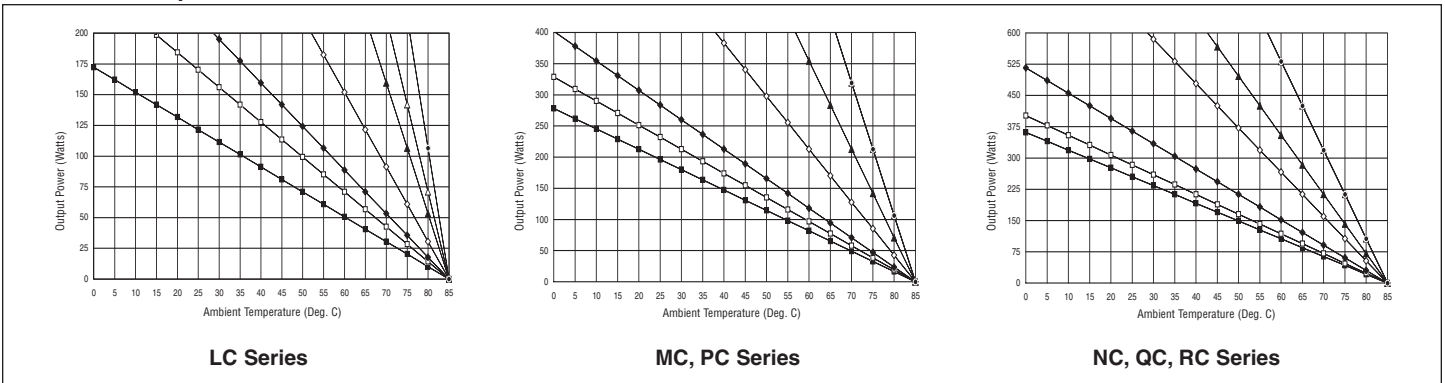
## 2 V to 7.5 V Output, Standard heat sink



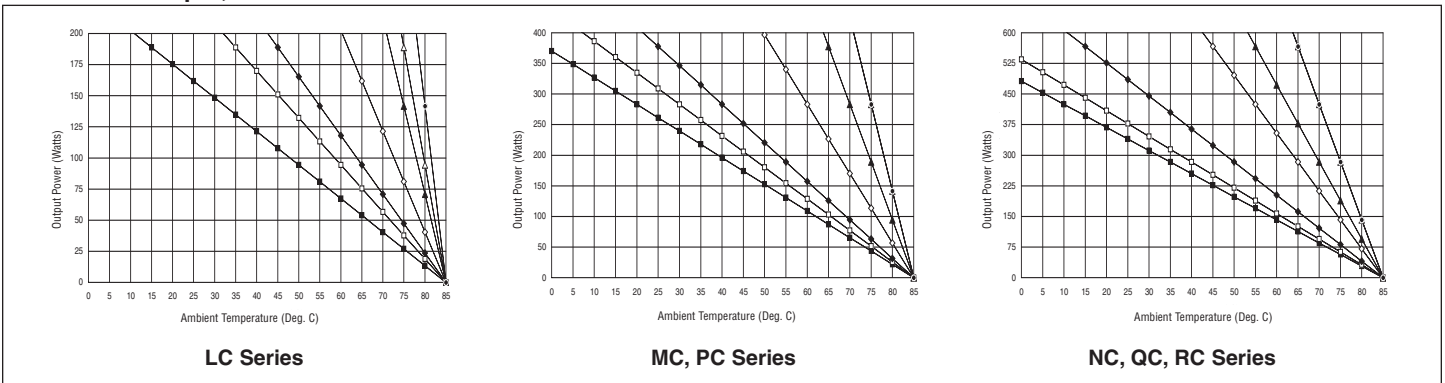
## 10 V to 95 V Output, Standard heat sink



## 2 V to 7.5 V Output, H1 heat sink

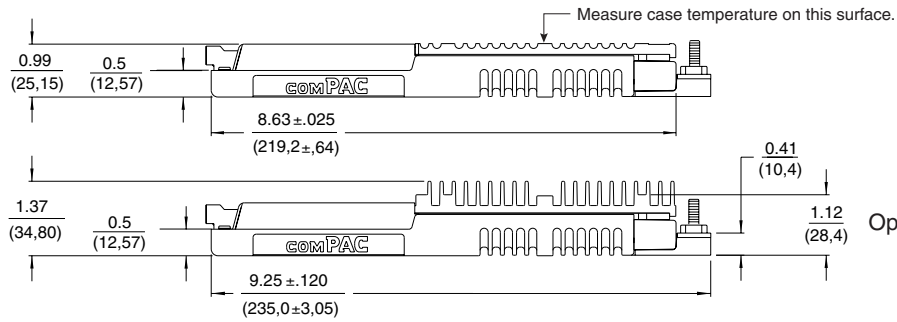


## 10 V to 95 V Output, H1 heat sink



ALL MODELS

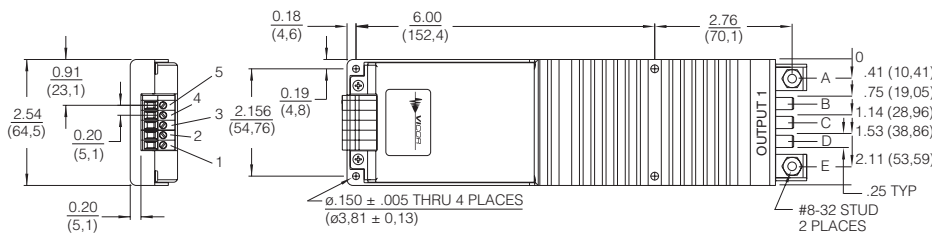
INPUTS	
1	Ground
2	-Input
3	+Input
4	Disable-
5	Disable+
OUTPUTS	
A	+Output
B	+Sense
C	Trim
D	-Sense
E	-Output



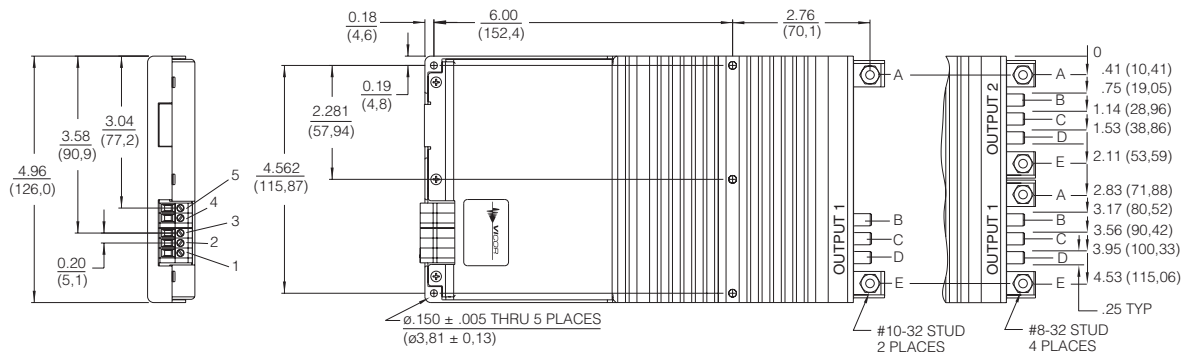
Standard Heat sink

Optional heat sink (H1)

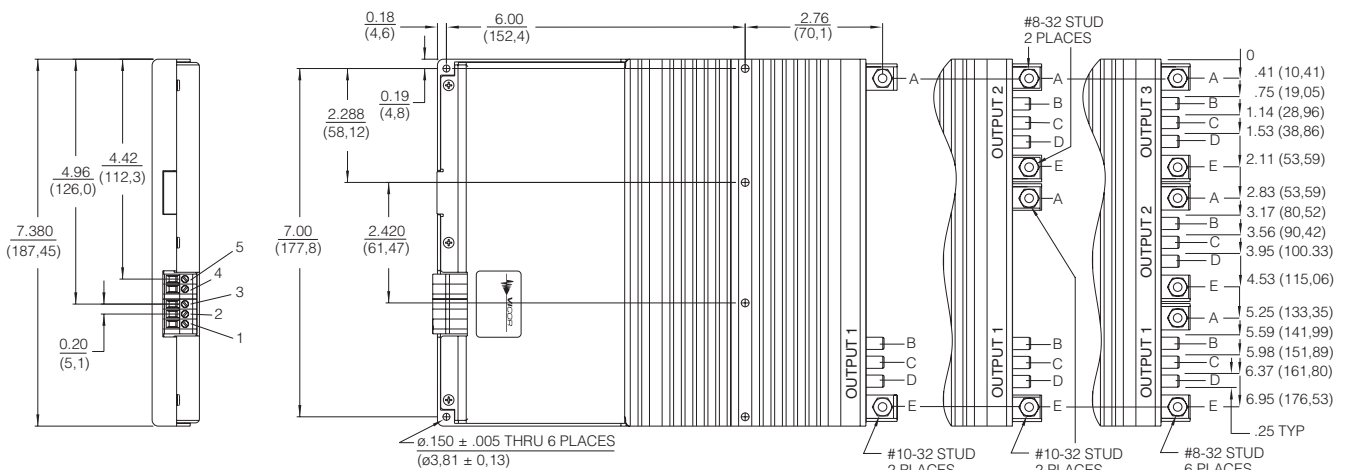
LC SERIES



MC, PC SERIES

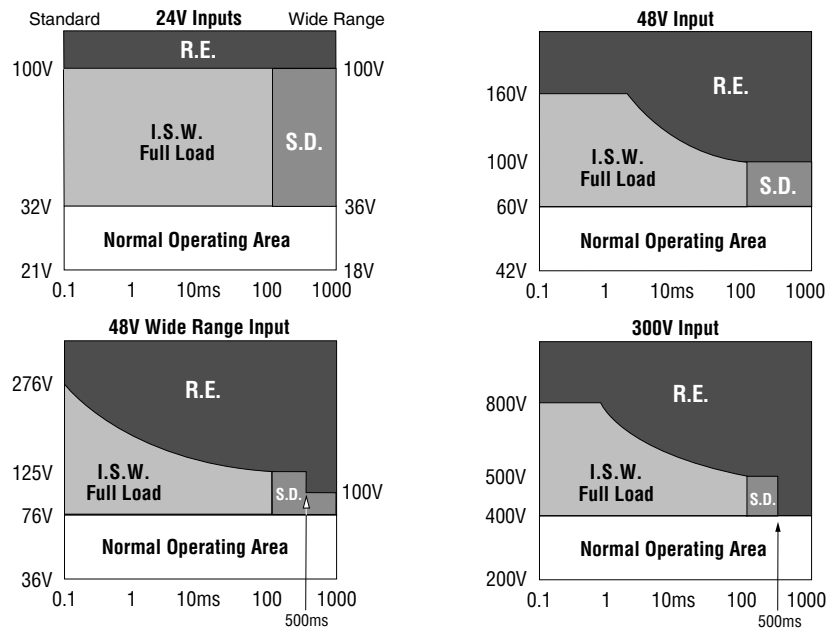


NC, QC, RC Series



# LONG TERM SAFE OPERATING AREA CURVES

(1% duty cycle max.,  $Z_s = .5\Omega$ , for short duration transient capability refer to specifications)



**I.S.W.:** Input surge withstand, no degradation of performance. **R.E.:** Ratings Exceeded **S.D.:** Shutdown

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