

SERIES: VFK400W | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- up to 400 W isolated output
- rugged metal enclosure with integrated heat sink
- 4:1 input range (10~36 Vdc, 18~75 Vdc)
- single output from 12~48 Vdc
- 1,500 Vdc isolation
- over current, over temperature, over voltage, and short circuit protection
- remote on/off
- efficiency up to 87%



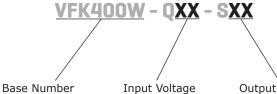
input voltage	output voltage	output current	output power	ripple and noise ¹	efficiency
range (Vdc)	(Vdc)	max (A)	max (W)	max (mVp-p)	max (%)
10~36	12	33.3	400	200	87
10~36	24	16.7	400	240	86
10~36	48	8.3	398	480	86
20~75	12	33.3	400	200	87
18~75	24	16.7	400	240	86
18~75	48	8.3	398	480	86.5
	voltage range (Vdc) 10~36 10~36 10~36 20~75 18~75	voltage range (Vdc) voltage 10~36 12 10~36 24 10~36 48 20~75 12 18~75 24	voltage range (Vdc) voltage (Vdc) current max (A) 10~36 12 33.3 10~36 24 16.7 10~36 48 8.3 20~75 12 33.3 18~75 24 16.7	voltage range (Vdc) voltage voltagecurrent max (W)power max (W) $10 \sim 36$ 1233.3400 $10 \sim 36$ 2416.7400 $10 \sim 36$ 488.3398 $20 \sim 75$ 1233.3400 $18 \sim 75$ 2416.7400	voltage range (Vdc)voltage (Vdc)current max (A)power max (W)and noise1 max (mVp-p) $10 \sim 36$ 1233.3400200 $10 \sim 36$ 2416.7400240 $10 \sim 36$ 488.3398480 $20 \sim 75$ 1233.3400200 $18 \sim 75$ 2416.7400240

1. Ripple and noise are measured at full load, 20 MHz BW with 10μF tantalum capacitor and 1μF ceramic capacitor across the output. The 48 Vdc output models require a 22μF aluminum capacitor and a 1μF ceramic capacitor across the output.

2. An external input capacitor of 470uF is recommended to reduce input ripple voltage.

PART NUMBER KEY

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Output Voltage

INPUT

parameter	conditions/d	escription	min	typ	max	units
	24 Vdc input		10	24	36	Vdc
operating input voltage	48 Vdc input	12 Vdc output model 24/48 Vdc output models	20 18	48 48	75 75	Vdc Vdc
	24 Vdc input	power up power down		9.5 8.5		Vdc Vdc
under voltage shutdown	48 Vdc input	power up power down		17.8 15.5		Vdc Vdc
CTDI 1	nositivo logio	models ON (open circuit)				
CTRL ¹	positive logic	models OFF (0~1.2 Vdc)				
filter	pi filter					

 Do not drive high, may damage device. Note:

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum output capacitance	for all models			2,200	μF
line regulation	measured from high line to low line			±1	%
load regulation	measured from full load to zero load			±1	%
voltage accuracy				±1.5	%
adjustability		90		105	%
switching frequency			250		kHz
transient response	25% step load change			500	μs
temperature coefficient			±0.03		%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous				
over current protection	% nominal output current	110		150	%
over voltage protection		115		140	%
over temperature protection	shutdown		110		°C

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	for 1 minute: input to output; input to case; output to case	1,500			Vdc
isolation resistance		10			MΩ
RoHS	2011/65/EU				

ENVIRONMENTAL

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parameter	conditions/description	min	typ	max	units
operating temperature	see derating curves	-40		85	°C
storage temperature		-55		105	°C

MECHANICAL

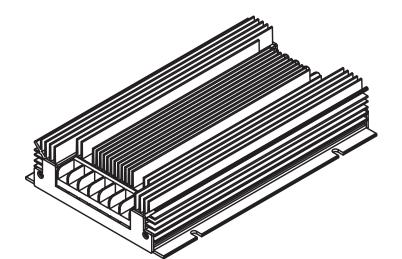
parameter	conditions/description	min	typ	max	units
dimensions	198.90 x 127.00 x 38.93 (7.831 x 5.000 x 1.533 inch)				mm
case material	steel and aluminum extrusion				
weight			1.18		kg

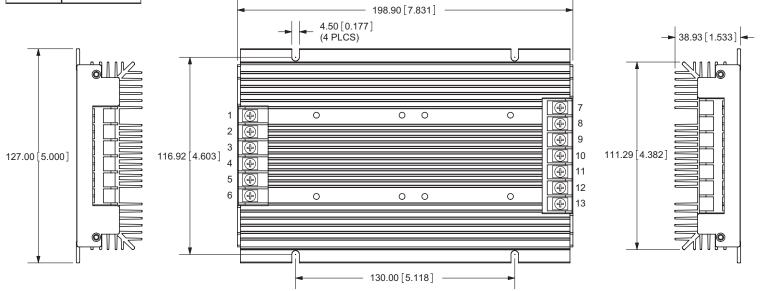
MECHANICAL DRAWING

units: mm[inch] tolerance: X.X = $\pm 0.5[\pm 0.02]$ X.XX = $\pm 0.25[\pm 0.010]$

wire range: 22~12 AWG screw size: #6-32

PIN CONNECTIONS					
PINCO	NNECTIONS				
PIN FUNCTION					
1, 2 +Vin					
3, 4	-Vin				
5	on/off				
6	case				
7, 8	+Vout				
9	+S				
10	trim				
11 -S					
12, 13	-Vout				





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40

20

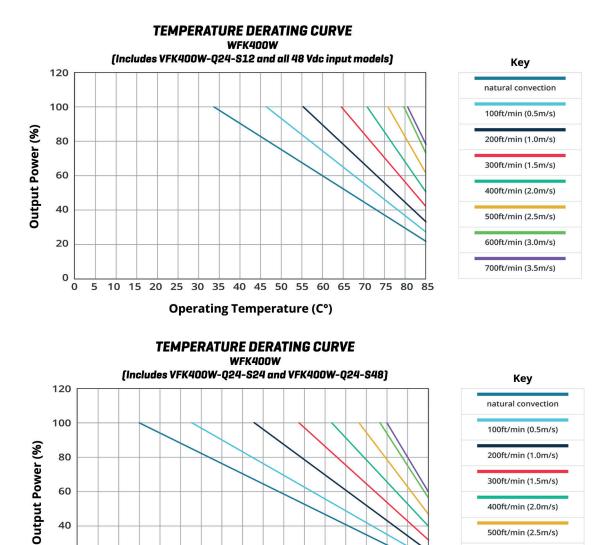
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0 5 500ft/min (2.5m/s) 600ft/min (3.0m/s)

700ft/min (3.5m/s)

DERATING CURVES



10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85

Operating Temperature (C°)

APPLICATION NOTES

Desired Vout (%Vout)

Nom. Vout (Vdc)

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12

24

48

1. Output Voltage Trimming

Leave open if not used.

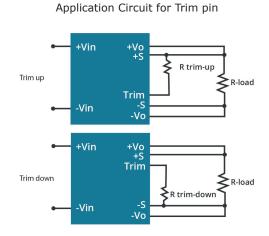


Figure 1

 $\label{eq:Table 1} \ensuremath{\mathsf{Trim}}\ \ensuremath{\mathsf{Up}}\ \ensuremath{\mathsf{Resistor}}\ \ensuremath{\mathsf{Values}}\ \ensuremath{(\mathsf{M}\Omega)^1}\ \ensuremath{\mathsf{Drim}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Up}}\ \ensuremath{\mathsf{Resistor}}\ \ensuremath{\mathsf{Sm}}\ \ensuremath{\mathsf{Up}}\ \ensuremath{\mathsf{Res}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{Im}\ \ensuremath{}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{\mathsf{Im}}\ \ensuremath{}\ \ensuremath{\mathsf{Im}}\ \ensuremath{}\ \ensurem$

102%

1.6

3.3

6.8

101%

2.2

4.3

10

Table 2
Trim Down Resistor Values (K Ω)

Desired Vout (%Vout) Nom. Vout (Vdc)		92%	94%	96%	98%
12	9	12	22	51	100
24	12	22	51	100	300
48	22	32	49	100	300

Note: 1. VFK400W-Q48-S12 model requires minimum input voltage of 21.6 Vdc in order to trim between 100~105%.

103%

1.2

2.2

4.8

104%

0.82

1.6

3.9

105%

0.68

1.5

3.5

Note: All specifications measured at 25°C, nominal input voltage, and full load unless otherwise noted.

REVISION HISTORY

rev.	description	date
1.0	initial release	03/13/2012
1.01	updated adjustability range	09/20/2012
1.02	corrected weight	12/18/2012
1.03	updated spec	04/01/2013
1.04	added trimming information	01/03/2014
1.05	CTRL line updated	11/13/2020
1.06	derating curves and trim circuit figure updated	09/13/2021
1.07	CE removed from safety marks	02/25/2022
1.08	CE added to safety marks	09/02/2022
1.09	company address updated	11/20/2024

The revision history provided is for informational purposes only and is believed to be accurate.



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CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

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