VD SERIES

500W DC/DC CONVERTERS
Single Output

並列運転可能
Parallel Operation

H40×W100×L220 (mm)

■ Features

- ●High Output 500W
- ●High Efficiency 89%～93%
- ●Input-Output Isolation (AC2000V)
- ●Possible Parallel Operation up to 4 converters
- ●Remote ON/OFF Control
- ●Input Low Voltage Protection
- ●Input Over Voltage Protection
- ●Thermal Protection +110℃～+120℃
- ●Cooling by mounting on Chassis or using Heat Sink
- ●Conformity to RoHS2 Directive
- ●No built-in aluminum and tantalum electrolytic capacitor

- ●高出力 500W
- ●高効率 89%～93%
- ●入出力間絶縁 (AC2000V)
- ●4台まで並列運転可能
- ●リモートON/OFFコントロール
- ●入力低電圧保護回路内蔵
- ●入力過電圧保護回路内蔵
- ●過熱保護回路内蔵 +110℃～+120℃
- ●シャーシ上又はヒートシンクの取付により放熱
- ●RoHS2指令対応
- ●アルミ電解コンデンサ及びタンタルコンデンサ不使用

■ General Characteristics

(at Ta : 25℃, Full Load, Nominal Vin)

- ●Input Voltage, Range: DC 12, 24, 48, 96, 200, 300, 400V (See Table 1)
- ●Output Voltage, Current: See Table 1
- ●Output Voltage Adjustment: ±5%
- ●Efficiency: See Table 1
- ●Line Regulation: 0.3% max. (at Vin Range)
- ●Load Regulation: 3.0% typ. (0～100% Load) (See Fig. 4)
- ●Output Ripple: (1.0% Vout) p-p max.
- ●Output Noise: (0.5% Vout+100mV) p-p max.
- ●Short Circuit Protection: Built-in, Auto-restart (See Fig. 2)
- ●Output Over Voltage Protection: Built-in, Shut-down (120%～140% Vout)
- ●Remote ON/OFF Control: ON : Short or 0～0.8V; OFF : Open or 2～10V (Between terminal ③ ～ ④)
- ●Temperature Coefficient: 0.02%/℃ max.
- ●Operating Ambient Temp.: −40℃～+85℃ (See Fig. 1)
- ●Max. Case Temp.: +105℃
- ●Storage Temp.: −40℃～+115℃
- ●Isolation Voltage: AC2000V one minute (Input−Output−Case)
- ●Isolation Impedance: 100MΩ min. (at DC1000V) (Input−Output−Case)
- ●Weight: Main Body : 2.1kg max. Heat Sink : 500g max.
- ●Humidity: 20～95% RH
- ●Shock: 490m/s² (11msec 3directions)
- ●Vibration: JIS E4031 Category 1 - Class B
- ●Surface Structure: Aluminum Case
- ●MTBF: 160,000H (Ta : 25℃, 80% Load, Nominal Vin)
- ●Warranty: 5 years

■ Selection Guide

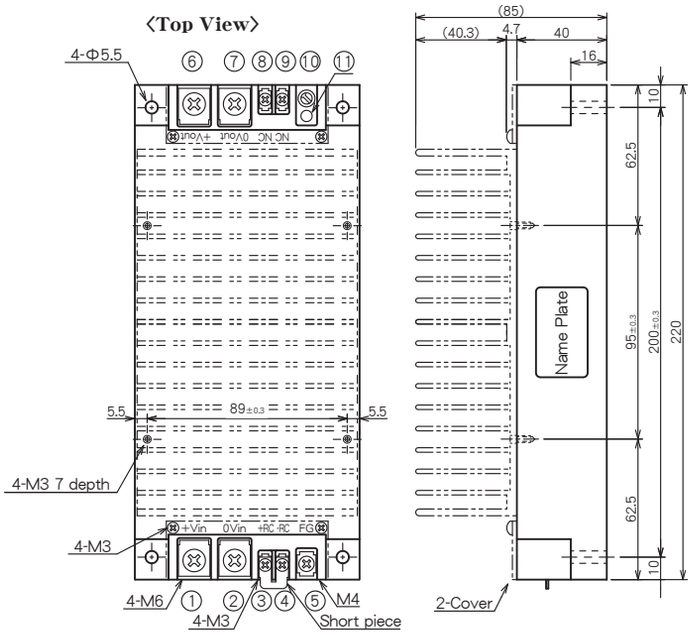
Table 1

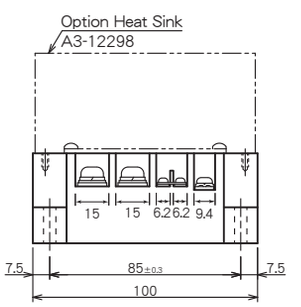
Model Number	Input Voltage (Range) (V. DC)	Output Voltage (V. DC)	Output Current (A)	Efficiency (typ.) (%) 20% Load	Efficiency (typ.) (%) 80% Load
VD12 - 12S 42A	12 (9～18)	12	42	91	90
VD12 - 13.8S 36A		13.8	36	91	90
VD12 - 15S 33A		15	33	91	89
VD12 - 24S 21A		24	21	91	89
VD12 - 28S 18A		28	18	91	89
VD12 - 48S 10.5A		48	10.5	91	91
VD12 - 100S 5A		100	5	90	91
VD12 - 140S 3.6A		140	3.6	90	90
VD12 - 200S 2.5A		200	2.5	90	90
VD12 - 300S 1.7A		300	1.7	89	89
VD12 - 400S 1.25A		400	1.25	89	89
VD24 - 12S 42A	24 (18～36)	12	42	91	91
VD24 - 13.8S 36A		13.8	36	91	91
VD24 - 15S 33A		15	33	91	90
VD24 - 24S 21A		24	21	91	90
VD24 - 28S 18A		28	18	91	90
VD24 - 48S 10.5A		48	10.5	91	92
VD24 - 100S 5A		100	5	91	92
VD24 - 140S 3.6A		140	3.6	90	91
VD24 - 200S 2.5A		200	2.5	90	91
VD24 - 300S 1.7A		300	1.7	89	90
VD24 - 400S 1.25A		400	1.25	89	90
VD48 - 12S 42A	48 (36～75)	12	42	89	91
VD48 - 13.8S 36A		13.8	36	89	91
VD48 - 15S 33A		15	33	89	90
VD48 - 24S 21A		24	21	89	91
VD48 - 28S 18A		28	18	89	91
VD48 - 48S 10.5A		48	10.5	89	93
VD48 - 100S 5A		100	5	88	93
VD48 - 140S 3.6A		140	3.6	88	92
VD48 - 200S 2.5A		200	2.5	88	92
VD48 - 300S 1.7A		300	1.7	88	91
VD48 - 400S 1.25A		400	1.25	88	91
VD96 - 12S 42A	96 (70～144)	12	42	89	91
VD96 - 13.8S 36A		13.8	36	89	91
VD96 - 15S 33A		15	33	89	90
VD96 - 24S 21A		24	21	89	91
VD96 - 28S 18A		28	18	89	91
VD96 - 48S 10.5A		48	10.5	89	93
VD96 - 100S 5A		100	5	88	93
VD96 - 140S 3.6A		140	3.6	88	92
VD96 - 200S 2.5A		200	2.5	88	92
VD96 - 300S 1.7A		300	1.7	88	91
VD96 - 400S 1.25A		400	1.25	88	91
VD200 - 12S 42A	200 (150～300)	12	42	89	91
VD200 - 13.8S 36A		13.8	36	89	91
VD200 - 15S 33A		15	33	89	90
VD200 - 24S 21A		24	21	89	91
VD200 - 28S 18A		28	18	89	91
VD200 - 48S 10.5A		48	10.5	89	93
VD200 - 100S 5A		100	5	88	93
VD200 - 140S 3.6A		140	3.6	88	92
VD200 - 200S 2.5A		200	2.5	88	92
VD200 - 300S 1.7A		300	1.7	88	91
VD200 - 400S 1.25A		400	1.25	88	91
VD300 - 12S 42A	300 (225～450)	12	42	88	91
VD300 - 13.8S 36A		13.8	36	88	91
VD300 - 15S 33A		15	33	88	90
VD300 - 24S 21A		24	21	88	91
VD300 - 28S 18A		28	18	88	91
VD300 - 48S 10.5A		48	10.5	88	93
VD300 - 100S 5A		100	5	87	93
VD300 - 140S 3.6A		140	3.6	87	92
VD300 - 200S 2.5A		200	2.5	87	92
VD300 - 300S 1.7A		300	1.7	87	91
VD300 - 400S 1.25A		400	1.25	87	91
VD400 - 12S 42A	400 (300～600)	12	42	87	91
VD400 - 13.8S 36A		13.8	36	87	91
VD400 - 15S 33A		15	33	87	90
VD400 - 24S 21A		24	21	87	91
VD400 - 28S 18A		28	18	87	91
VD400 - 48S 10.5A		48	10.5	87	93
VD400 - 100S 5A		100	5	86	93
VD400 - 140S 3.6A		140	3.6	86	92
VD400 - 200S 2.5A		200	2.5	86	92
VD400 - 300S 1.7A		300	1.7	86	91
VD400 - 400S 1.25A		400	1.25	86	91

※ 上記仕様以外にも対応可能ですので お問い合わせ下さい。
Please consult with us about other specification.

VD SERIES DATA SHEET

■ Terminal Outs & Dimensions (±0.5mm)





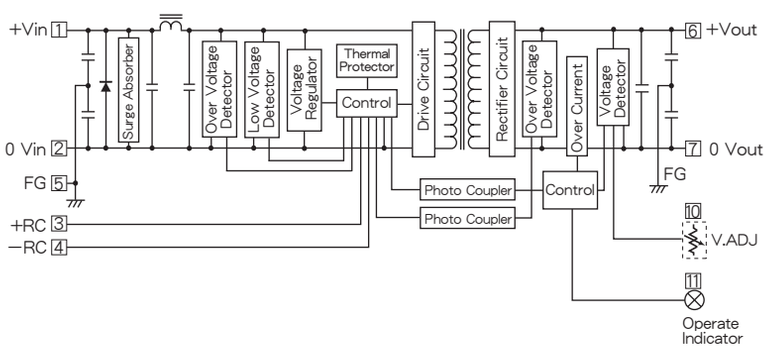
Terminal Outs and Function

①	+Vdc in	⑥	+Vdc out
②	0 Vdc in	⑦	0 Vdc out
③	+RC	⑧	NC
④	−RC	⑨	NC
⑤	FG	⑩	V.ADJ
		⑪	Operate Indicator

Ⓢ Voltage Adjustable Trimmer

＊Option Heat Sink Model : A3-12298

■ Block Diagram



■ Characteristic Curves

Fig. 1 Derating Curve

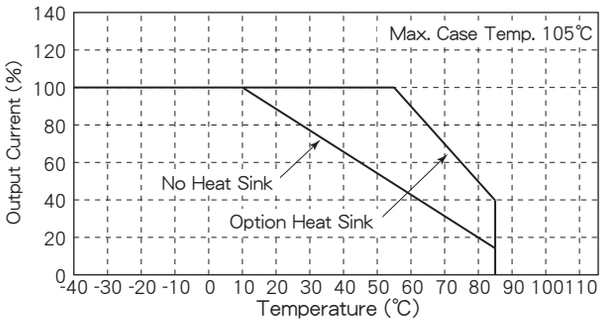


Fig. 2 Short Circuit Operating Area

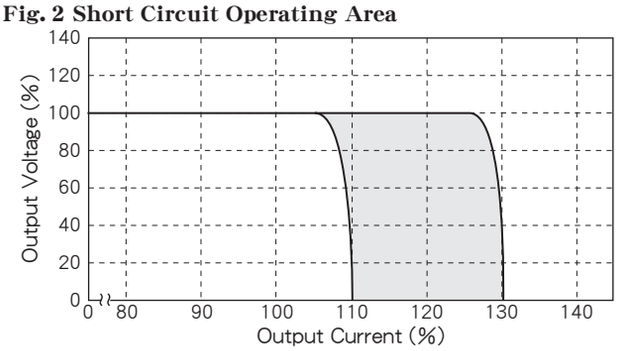


Fig. 3 Temperature Characteristic on Case Surface

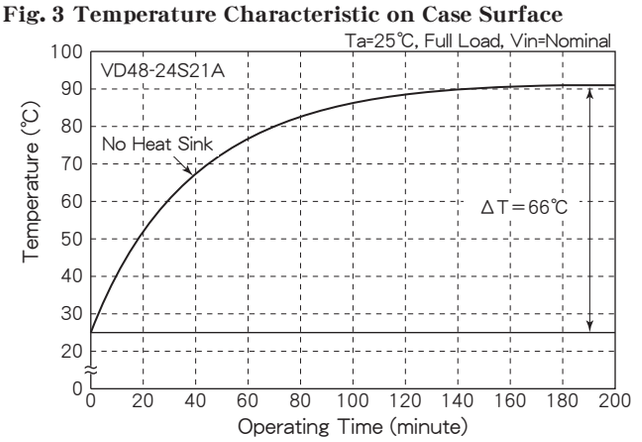
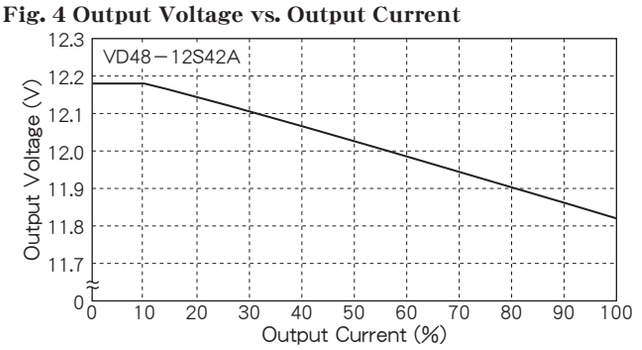


Fig. 4 Output Voltage vs. Output Current



＊並列運転時に各モジュールの電流を平均化するため
負荷変動を大きくしてあります。
Load Regulation is regulated large on purpose to equate
the each unit's output current at parallel operation.

Fig. 5 Efficiency vs. Output Current

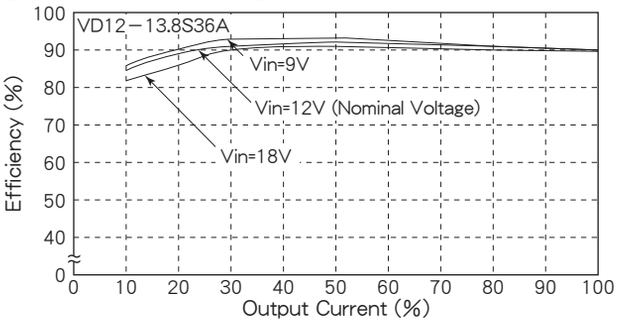


Fig. 6 Efficiency vs. Output Current

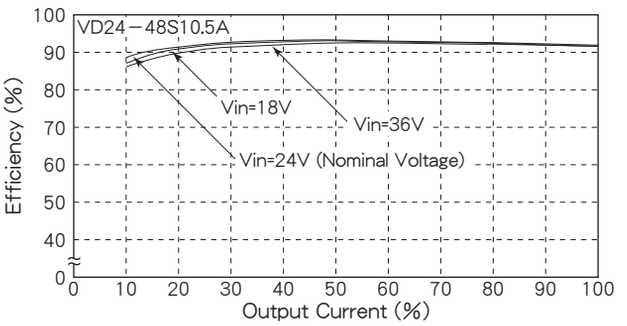


Fig. 7 Efficiency vs. Output Current

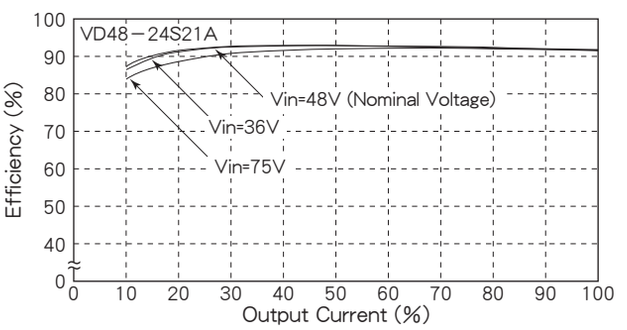
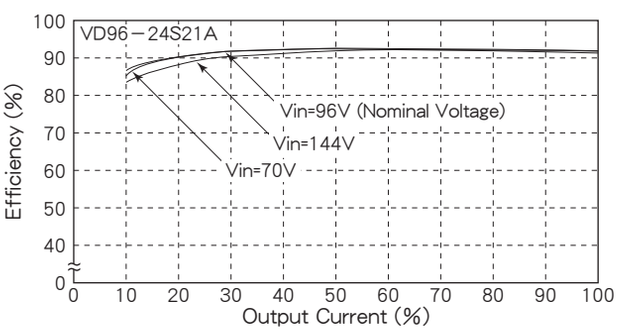


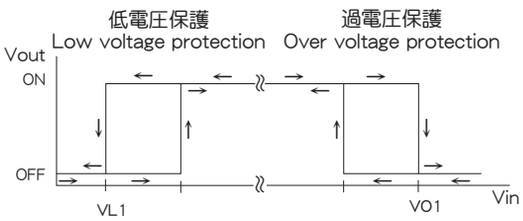
Fig. 8 Efficiency vs. Output Current



■ 主な機能及び注意事項 Function and direction in application

1. 入力低電圧保護、入力過電圧保護 Input low/over voltage protection
入力が定格範囲外になると出力を停止します。範囲内に戻すと自動復帰します。またヒステリシス特性を有しています。
This function stops output if input is out of the rated voltage range and restarts output automatically in the rating votage range. It also has hysteresis characteristic.

ヒステリシス特性 Hysteresis Characteristic



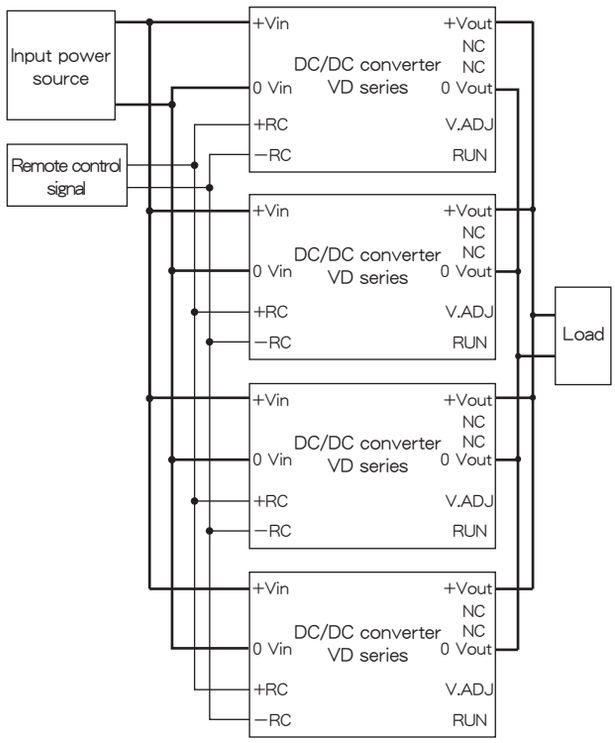
定格入力電圧 Rated input voltage	低電圧保護 Low voltage protection VL1	過電圧保護 Over voltage protection VO1
12V (9～ 18V)	6～8V	20～22V
24V (18～ 36V)	12～16V	40～44V
48V (36～ 75V)	24～32V	80～88V
96V (70～144V)	48～64V	152～160V
200V (150～300V)	100～133V	316～333V
300V (225～450V)	150～200V	474～500V
400V (300～600V)	200～266V	633～666V

2. 出力電圧値 Output voltage
出力電圧値はボリューム(V.ADJ)を回転させることにより、定格出力電圧の約±5%可変することができます。
Output voltage will be adjusted to ±5% of rated voltage by means of volume (V.ADJ).

3. 出力過電流保護 Output over current protection
負荷が短絡した場合など、過大な負荷電流が流れたときに負荷と本体を保護する機能です。定格出力電流の約105%～130%にて検出し作動します(Fig. 2 参照)。出力は定電流電圧垂下特性、入力電流はフの字特性となっています。また自動復帰特性を有しています。
This function is to protect a power supply and a load when excessive current flows in case of short-circuited load or such possible conditions. It will operate in 105 - 130% of rated output current (see Fig. 2). Output has constant current voltage limiting characteristic and input current has combined current limiting with fold-back protection. It also has automatic reset function.

4. 出力過電圧保護 Output over voltage protection
出力の過電圧から負荷側を保護する機能です。出力電圧値が定格値の約120～140%になると出力をOFFします。
This function is to protect a load from output over voltage. Output will be shut down when output voltage is 120 - 140% of rated voltge.

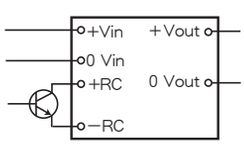
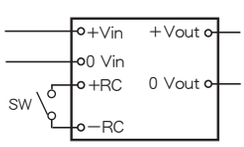
5. 並列運転 Parallel operation
同機種を並列に動作させることにより出力電流容量を増やすことができます。
並列運転は 4 台まで接続可能です。
It is possible to increase output current capacity by means of parallel operation of the same medel. Please see the figure below for wiring instructions.
Parallel operation is possible up to 4 converters.



6. リモートON/OFFコントロール Remote ON/OFF control
リモートON/OFFコントロールを使用して、電源の出力をON/OFFする事ができます。RC端子間をショートする事で出力電圧がON、RC端子間をオープンにする事で出力電圧がOFFになります。RC端子間にTTLレベルの電気信号を加える事により出力をON/OFFする事ができます。RC端子は入力側にあり、入力電源回路とは絶縁されていません。ON/OFFコントロールを使用しないときは、＋RC端子と－RC端子を付属のショートピンで短絡させて下さい。
Using remote ON/OFF control, ON/OFF of the power supply output is possible. The output voltage operates by a short between RC terminals, and the output voltage stops by open between RC terminals. ON/OFF of the output voltage is possible by adding the electrical signal of the TTL level between RC terminals. RC terminals are located on the input side and the circuit is not isolated from input power source circuit. In case you don't use ON/OFF control, please short-circuit ＋RC and －RC terminals by means of attached short-bar.

＊回路構成例 Example of ON/OFF control circuit

●TRによる例 Example by transistor



●SWによる例 Example by switch