

# FD SERIES

## 80~100W DC/DC CONVERTERS Single Output

FDU type

FDS type



H20×W60×L120 (mm)



H20×W60×L120 (mm)

### Features

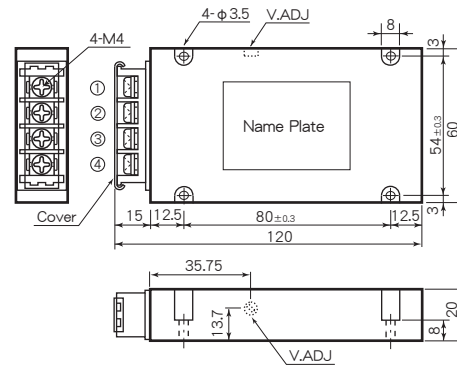
- Built-in Input Filter
  - Input-Output Isolation
  - High Efficiency 85~92%
  - Wide Input Voltage Range
  - High Reliability
  - Long Life by Mounting on Chassis or Using Heat Sink
  - Adjustable Output Voltage ±5%
  - Input Low Voltage Protection
  - Input Over Voltage Protection
  - Output Over Voltage Protection
  - Thermal Protection +110°C~+120°C
  - Operating Ambient Temperature -40°C~+85°C
  - Conformity to RoHS Directive
  - Not built-in aluminum and tantalum electrolytic capacitor
- 入力フィルタ内蔵
  - 入出力間絶縁
  - 高効率 85~92%
  - 広範囲な入力電圧
  - 高信頼性
  - シャーシや放熱板への取り付けにより長寿命化
  - 可変出力電圧 ±5%
  - 入力低電圧保護回路内蔵
  - 入力過電圧保護回路内蔵
  - 出力過電圧保護回路内蔵
  - 過熱保護回路内蔵 +110°C~+120°C
  - 動作周囲温度 -40°C~+85°C
  - RoHS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

- Input Voltage, Range (at Ta : 25°C, Full Load, Nominal Vin) DC12, 24, 48, 100, 140V (See Table 1)
- Output Voltage, Current See Table 1
- Output Voltage Range ±5% Adjustable
- Efficiency See Table 1
- Line Regulation ±0.3% max. (at Vin Range)
- Load Regulation ±0.5% max. ±1% max. (3.3, 5V Vout only) (0~100% Load)
- Reflected Input Ripple, Noise (5% Vin) Vp-p max.
- Output Ripple 40mVp-p max.
- Output Noise (0.5% Vout+100mV) p-p max.
- Short Circuit Protection Built-in, Auto-restart (See Fig. 2)
- Over Voltage Protection
- Temperature Coefficient 115~140% Output Voltage
- Operating Ambient Temp. 0.02%/°C max.
- Max. Case Temperature -40°C~+85°C (See Fig. 1)
- Storage Temperature +105°C
- Isolation Voltage -55°C~+125°C AC2000V one minute (Input-Output-Case) 100MΩ min. (at DC1000V) (Input-Output-Case)
- Weight 350g max.
- Humidity 20~95% RH
- Shock 490m/s<sup>2</sup> (11msec 3directions)
- Vibration 10~55Hz 98m/s<sup>2</sup> (30minutes 3directions)
- Surface Structure Aluminum Case
- MTBF 400,000H (Ta : 25°C, 80% Load, Nominal Vin)
- Warranty 5 years

### Terminal Outs & Dimensions (±0.5mm)

FDU type

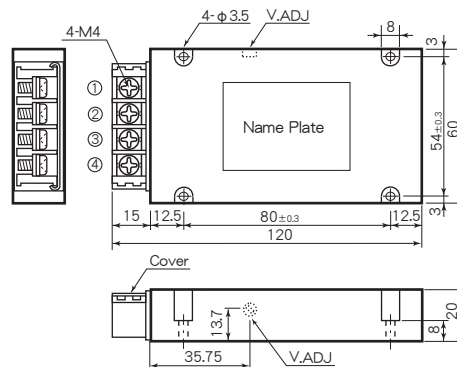


Terminal Outs

- ① +Vdc in
- ② 0 Vdc in
- ③ +Vdc out
- ④ 0 Vdc out

Ⓢ Voltage Adjustable Trimmer

FDS type



Terminal Outs

- ① +Vdc in
- ② 0 Vdc in
- ③ +Vdc out
- ④ 0 Vdc out

Ⓢ Voltage Adjustable Trimmer

### Selection Guide

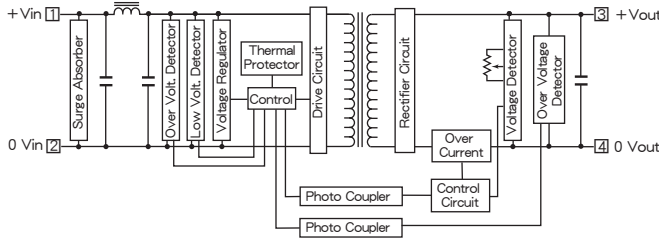
Table 1

| Model Number           | Input Volt. (Range) (V. DC) | Output Voltage (V. DC) | Output Current (A) | Efficiency (Typical)(%) |          |    |
|------------------------|-----------------------------|------------------------|--------------------|-------------------------|----------|----|
|                        |                             |                        |                    | 20% Load                | 80% Load |    |
| FDU(FDS) 12-3.3S 24A   | 12 (8~18)                   | 3.3                    | 24                 | 85                      | 85       |    |
| FDU(FDS) 12-5S 20A     |                             | 5                      | 20                 | 87                      | 89       |    |
| FDU(FDS) 12-6S16.7A    |                             | 6                      | 16.7               | 87                      | 89       |    |
| FDU(FDS) 12-12S 8.4A   |                             | 12                     | 8.4                | 88                      | 90       |    |
| FDU(FDS) 12-13.8S7.2A  |                             | 13.8                   | 7.2                | 88                      | 89       |    |
| FDU(FDS) 12-15S 6.7A   |                             | 15                     | 6.7                | 88                      | 89       |    |
| FDU(FDS) 12-24S 4.2A   |                             | 24                     | 4.2                | 88                      | 89       |    |
| FDU(FDS) 24-3.3S 24A   |                             | 24 (16~36)             | 3.3                | 24                      | 88       | 90 |
| FDU(FDS) 24-5S 20A     |                             |                        | 5                  | 20                      | 88       | 91 |
| FDU(FDS) 24-6S16.7A    |                             |                        | 6                  | 16.7                    | 88       | 91 |
| FDU(FDS) 24-12S 8.4A   |                             |                        | 12                 | 8.4                     | 88       | 91 |
| FDU(FDS) 24-13.8S7.2A  |                             |                        | 13.8               | 7.2                     | 88       | 91 |
| FDU(FDS) 24-15S 6.7A   | 15                          |                        | 6.7                | 88                      | 91       |    |
| FDU(FDS) 24-24S 4.2A   | 24                          |                        | 4.2                | 88                      | 91       |    |
| FDU(FDS) 48-3.3S 24A   | 48 (32~72)                  |                        | 3.3                | 24                      | 87       | 88 |
| FDU(FDS) 48-5S 20A     |                             |                        | 5                  | 20                      | 89       | 92 |
| FDU(FDS) 48-6S16.7A    |                             |                        | 6                  | 16.7                    | 88       | 92 |
| FDU(FDS) 48-12S 8.4A   |                             |                        | 12                 | 8.4                     | 88       | 91 |
| FDU(FDS) 48-13.8S7.2A  |                             |                        | 13.8               | 7.2                     | 88       | 91 |
| FDU(FDS) 48-15S 6.7A   |                             | 15                     | 6.7                | 88                      | 91       |    |
| FDU(FDS) 48-24S 4.2A   |                             | 24                     | 4.2                | 88                      | 91       |    |
| FDU(FDS) 100-3.3S 24A  |                             | 100 (64~144)           | 3.3                | 24                      | 87       | 88 |
| FDU(FDS) 100-5S 20A    |                             |                        | 5                  | 20                      | 88       | 90 |
| FDU(FDS) 100-6S16.7A   |                             |                        | 6                  | 16.7                    | 88       | 90 |
| FDU(FDS) 100-12S 8.4A  |                             |                        | 12                 | 8.4                     | 88       | 91 |
| FDU(FDS) 100-13.8S7.2A |                             |                        | 13.8               | 7.2                     | 88       | 91 |
| FDU(FDS) 100-15S 6.7A  | 15                          |                        | 6.7                | 88                      | 91       |    |
| FDU(FDS) 100-24S 4.2A  | 24                          |                        | 4.2                | 88                      | 91       |    |
| FDU(FDS) 140-3.3S 24A  | 140 (90~200)                |                        | 3.3                | 24                      | 87       | 88 |
| FDU(FDS) 140-5S 20A    |                             |                        | 5                  | 20                      | 88       | 90 |
| FDU(FDS) 140-6S16.7A   |                             |                        | 6                  | 16.7                    | 88       | 90 |
| FDU(FDS) 140-12S 8.4A  |                             |                        | 12                 | 8.4                     | 88       | 91 |
| FDU(FDS) 140-13.8S7.2A |                             |                        | 13.8               | 7.2                     | 88       | 91 |
| FDU(FDS) 140-15S 6.7A  |                             | 15                     | 6.7                | 88                      | 91       |    |
| FDU(FDS) 140-24S 4.2A  |                             | 24                     | 4.2                | 88                      | 91       |    |

\* 上記仕様以外にも対応可能ですのでお問い合わせください。  
Please consult with us about other specification.

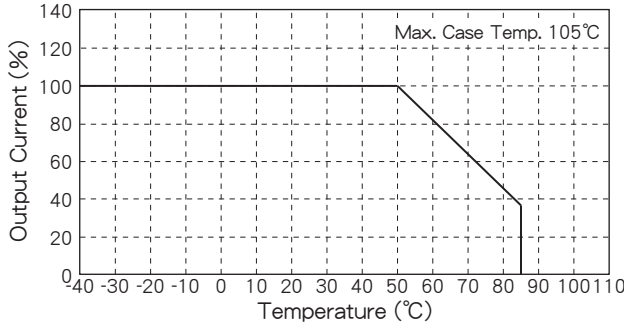
# FD SERIES DATA SHEET

## Block Diagram

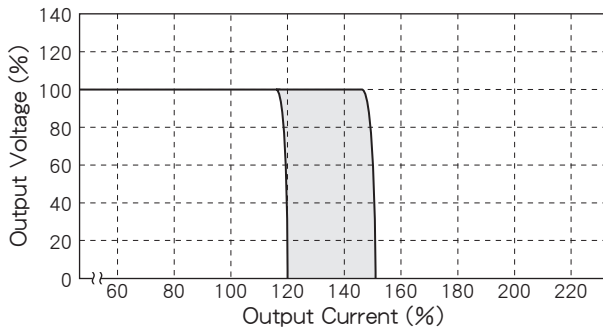


## Characteristic Curves

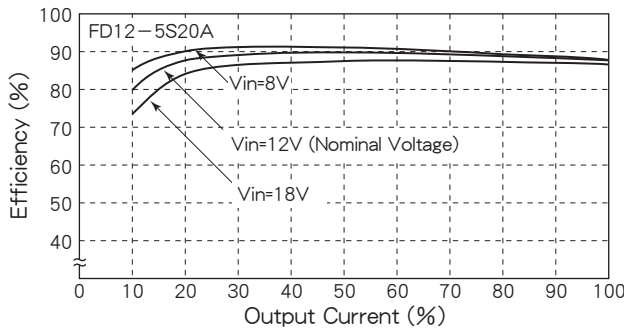
**Fig. 1 Derating Curve**



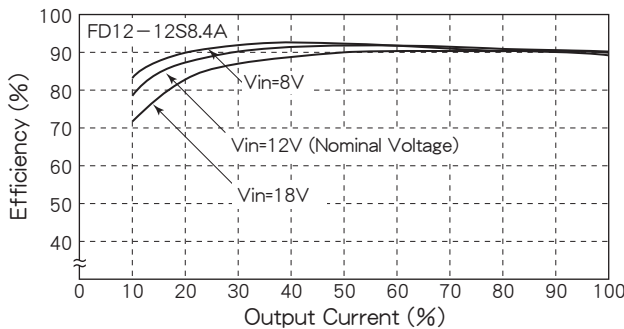
**Fig. 2 Short Circuit Operating Area**



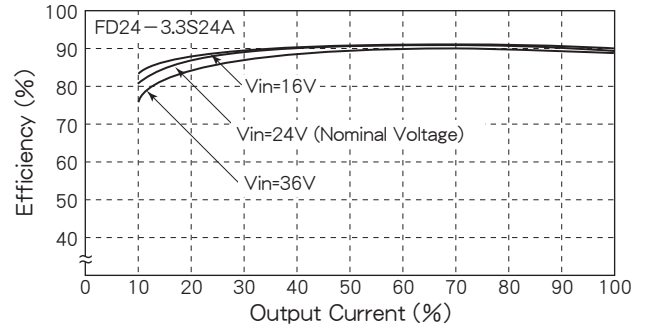
**Fig. 3 Efficiency vs. Output Current**



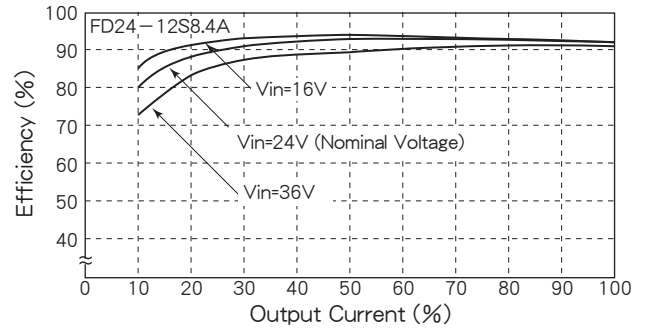
**Fig. 4 Efficiency vs. Output Current**



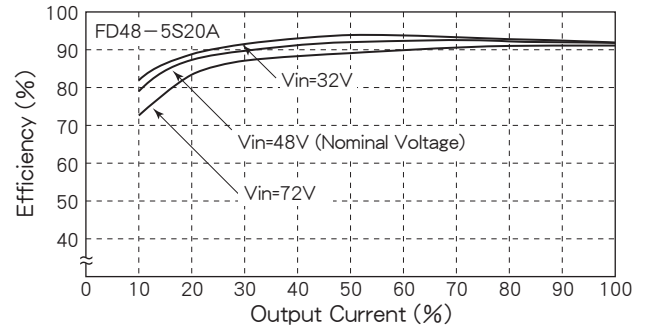
**Fig. 5 Efficiency vs. Output Current**



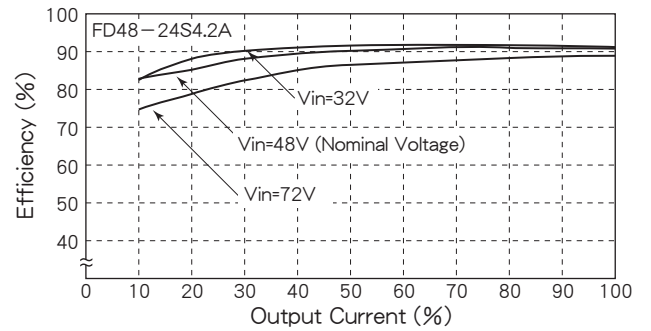
**Fig. 6 Efficiency vs. Output Current**



**Fig. 7 Efficiency vs. Output Current**



**Fig. 8 Efficiency vs. Output Current**



**Fig. 9 Efficiency vs. Output Current**

