FDC60 SERIES

DC / DC Single & Dual Output: 60 Watts

HELIOS POWER SOLUTIONS
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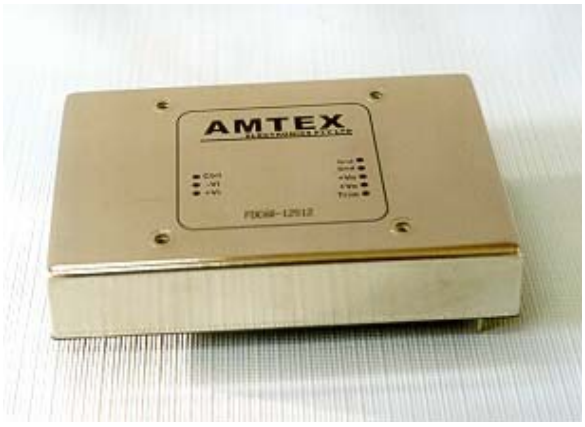

Features

- 2:1 input range
- 12V, 24V and 48V input options
- Single & dual output options
- 60 watts output power
- Six-Sided continuous shield
- High efficiency up to 87%
- Industry standard package
- Fixed switching efficiency
- High isolation 1600VDC
- Output voltage trim: Single output
- Overload & Overvoltage protection
- Remote ON/OFF

Specifications:

Input Voltage	12VDC (9 ~ 18) 24VDC (18 ~ 36) 48VDC (36 ~75)
Input Filter	Pi type
Input Surge Voltage. (100mS)	12V: 36VDC, 24V: 50VDC, 48V: 100VDC
Input Reflected Ripple Current	40mA pk-pk (@ nominal input & 100% load
Start Up time	Typically 25mS constant resistive load
Remote ON/OFF	DC-DC ON Open or 3.5V < Vr < 12V DC-DC OFF Short or 0V < Vr < 1.2V Input current of remote control pin: 30mA
Output power	60 watts
Voltage Accuracy	Single & Dual ±2% Triple 3.3V/5V ±2%
Voltage Trim	±10% (see output trim table)
Minim Load	10% (Note 1)
Line Regulation	Single ±0.5% Dual ±1.0%
Load Regulation (10% to 100% load)	Single ±0.5% Dual ±1.0%
Cross Regulation	±5.0%
Ripple & noise	50 ~ 150mV. 20MHZ bandwith
Temp. Coefficient	±0.02% / ºC
Transient Response	500uS (25% load step change)
Over voltage Protection (Zener Diode Clamp)	3.3V: 3.9V 5.0V: 6.2V 12V: 15V 15V: 18V
Overload Protection	Typically 150% of load

Short Circuit protection	Continuous hicc-up mode
Efficiency	Model dependant 78 ~ 87%
Isolation	1600VDC
Isolation Cap.	1500pF
Switching Freq.	200KHz
Case Material	Nickel-coated copper
Base Material	Non-conductive black plastic
Potting	Epoxy UL94-V0
Dimensions	100.2 x 70.1 x 19mm
Weight	280g
MTBF	1.533 x 10^6 Hrs
Operating Temp	-25ºC to +70ºC (with derating)
Case Temp	+95ºC maximum case temperate
Thermal Impedance	5.29ºC / watt (convection cooled)
Thermal shock	MIL-STD-810D
Vibration	10-55Hz, 10G, 30min along X, Y,Z
Humidity	5-95% RH
EMC	EN55022 Class A
ESD	EN61000-4-2
Radiated Immunity	EN61000-4-3
Fast Transients	EN61000-4-4
Surge	EN61000-4-5
Conducted Immunity	EN61000-4-6

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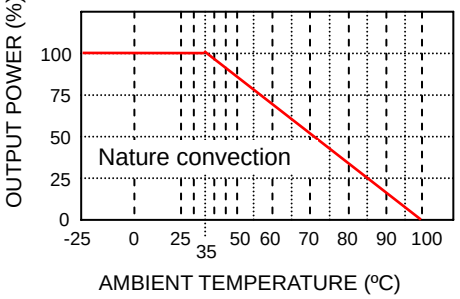
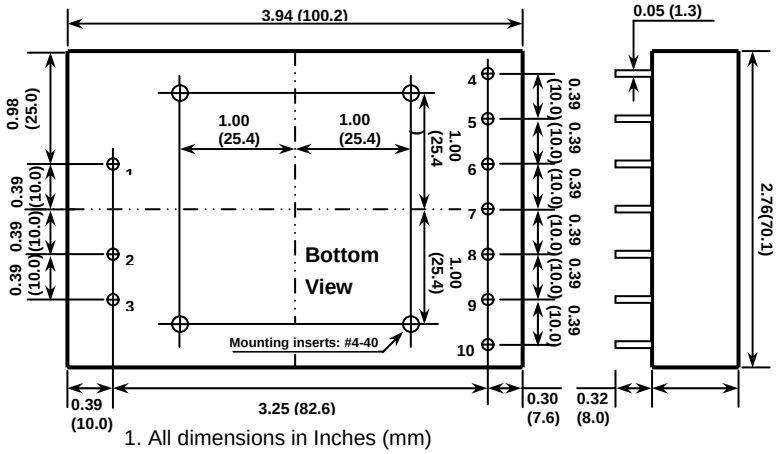
Model	Input V	Output V	Output A	Output Ripple & Noise	Input A	Eff (%)	Capacitor Load max
FDC60-12S33	9 – 18 V	3.3 V	15A	50mVp-p	5430mA	80	38700uF
FDC60-12S05	9 – 18 V	5 V	12A	75mVp-p	6330mA	83	20400uF
FDC60-12S12	9 – 18 V	12 V	5A	120mVp-p	6250mA	84	3550uF
FDC60-12S15	9 – 18 V	15 V	4A	150mVp-p	6250mA	84	2300uF
FDC60-12D05	9 – 18 V	± 5 V	+10 / -2A	75mVp-p	6500mA	81	17000 / 3400uF
FDC60-12D12	9 – 18 V	± 12 V	± 2.5A	120mVp-p	6250mA	84	± 900uF
FDC60-12D15	9 – 18 V	± 15 V	± 2A	150mVp-p	6250mA	84	± 600uF
FDC60-12D3305	9 – 18 V	3.3 / 5V	6 / 6A	50mVp-p / 75mVp-p	5770mA	76	16000 / 10200uF
FDC60-24S33	18 – 36 V	3.3 V	15A	50mVp-p	2750mA	79	38700uF
FDC60-24S05	18 – 36 V	5 V	12A	75mVp-p	3090mA	85	20400uF
FDC60-24S12	18 – 36 V	12 V	5A	120mVp-p	2980mA	88	3550uF
FDC60-24S15	18 – 36 V	15 V	4A	150mVp-p	2940mA	89	2300uF
FDC60-24D05	18 – 36 V	± 5 V	+10 / -2A	75mVp-p	3130mA	84	17000 / 3400uF
FDC60-24D12	18 – 36 V	± 12 V	± 2.5A	120mVp-p	3050mA	86	± 900uF
FDC60-24D15	18 – 36 V	± 15 V	± 2A	150mVp-p	3010mA	87	± 600uF
FDC60-24D3305	18 – 36 V	3.3 / 5V	6 / 6A	50mVp-p / 75mVp-p	2700mA	81	16000 / 10200uF
FDC60-48S33	36 – 75 V	3.3 V	15A	50mVp-p	1310mA	83	38700uF
FDC60-48S05	36 – 75 V	5 V	12A	75mVp-p	1520mA	86	20400uF
FDC60-48S12	36 – 75 V	12 V	5A	120mVp-p	1470mA	89	3550uF
FDC60-48S15	36 – 75 V	15 V	4A	150mVp-p	1450mA	90	2300uF
FDC60-48D05	36 – 75 V	± 5 V	+10 / -2A	75mVp-p	1540mA	85	17000 / 3400uF
FDC60-48D12	36 – 75 V	± 12 V	± 2.5A	120mVp-p	1450mA	90	± 900uF
FDC60-48D15	36 – 75 V	± 15 V	± 2A	150mVp-p	1450mA	90	± 600uF
FDC60-48D3305	36 – 75 V	3.3 / 5V	6 / 6A	50mVp-p / 75mVp-p	1310mA	83	16000 / 10200uF

Notes:

1. The FDC60 series required a minimum 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
2. Cross regulation: Dual output—Asymmetrical load 25% to 100% full load
3. Please add an external filter at converter input terminals when measuring input reflected ripple, as figure 1.
   L：Simulated source impedance of 12uH.
   C：Nippon chemi-con KMF series 220uF/100V, ESR 90mΩ.
4. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40ºC. (Ground fixed and controlled environment)
5. Typical values at nominal input voltage and full load, constant resistive load.

(FDC60-24D05 Derating Curve)





1. All dimensions in Inches (mm)
2. Pin pitch tolerance ±0.014(0.35)

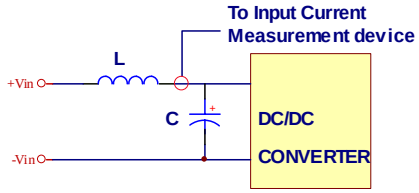


figure 1

Pin Assignment							
PIN	SINGLE	DUAL	D3305	PIN	SINGLE	DUAL	D3305
1	+ INPUT	+ INPUT	+ INPUT	6	+OUTPUT	+OUTPUT	+3.3V
2	- INPUT	- INPUT	- INPUT	7	- OUTPUT	COM	COM
3	CTRL	CTRL	CTRL	8	- OUTPUT	COM	COM
4	TRIM	TRIM	TRIM	9	NO PIN	- OUTPUT	+ 5V
5	+OUTPUT	+OUTPUT	+3.3V	10	NO PIN	- OUTPUT	+ 5V

External Output Voltage Trim

Output can be externally trimmed by using the method shown below.
( ) for dual output trim
[ ] XXD3305 only trim 3.3V