



APPLICATIONS

Communication System
Industry Control System
Factory Automatic Equipment
Semiconductor Equipment

FEATURES

- DIN RAIL DC/DC CONVERTERS
- 40 WATTS MAXIMUM OUTPUT POWER
- OFFER SINGLE AND DUAL OUTPUT
- OVERLOAD AND SHORT CIRCUIT PROTECTION
- OVER VOLTAGE PROTECTION
- RELIABLE SNAP-ON FOR DIN RAIL TS-35/7.5 OR TS-35/15
- I/O-ISOLATION 1600 VDC
- CASE PROTECTION MEET IP20(IEC60529)
- INTERNAL INPUT FUSE PROTECTION
- INTERNAL INPUT REVERSAL POLARITY PROTECTION
- INTERNAL INPUT IN-RUSH CURRENT LIMIT CIRCUIT
- INTERNAL OUTPUT DC-OK INDICATOR
- MEET EN55022 CLASS B
- COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU

DESCRIPTION

The DFEC40W series was designed to easy application of din rail DC-DC converters. Easy installation is provided with snap-on mounting on the DIN-rail. Internal protection circuits such as input reversal and in-rush current limit protection, as well as output short-circuit and over-voltage protection. A green LED at the front displays the status of the output(s).

TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25°C otherwise noted

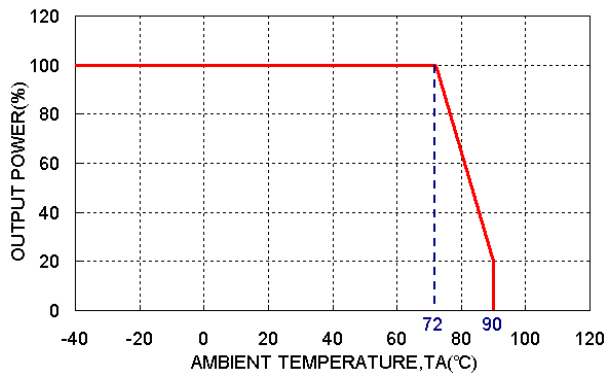
OUTPUT SPECIFICATIONS		INPUT SPECIFICATIONS	
Output power	40 Watts, max.	Input voltage range	24VDC nominal input 9.5 ~ 36VDC 48VDC nominal input 18 ~ 75VDC
Voltage accuracy	3.3Vout ± 1.5% Others ± 1%	Input surge voltage	24VDC input 50VDC 100ms, max. 48VDC input 100VDC 100ms, max.
Minimum load (Note 6)	See table	Input fuse (slow blow)	24VDC input 8A 48VDC input 4A
Voltage adjustability (Note 7)	Single 28Vout -3% ~ +17% Single Others ± 10%	In-rush current	15A
Line regulation	LL to HL at Full load ± 0.5%	Input reflected ripple current	15mA p-p
Load regulation (Note 8)	No load to Full load 3.3Vout ± 2% Others ± 1%	Start up time	Nominal input and constant resistive load Power up 100ms Remote ON/OFF 20ms
Load cross regulation (Note 9)	Dual ± 5%	Start-up voltage	24VDC input 9.5VDC 48VDC input 18VDC
Ripple and noise	20MHz bandwidth See table	Shutdown voltage	24VDC input 8VDC 48VDC input 16VDC
Temperature coefficient	±0.02% / °C, max.	Remote ON/OFF (Note 10)	
Transient response recovery time 25% load step change	250µs	(Positive logic) (Standard)	DC-DC ON Open or 3 V < Vr < 12V DC-DC OFF Short or 0V < Vr < 1.2V
Over voltage protection	3.3VDC output 3.9VDC 5VDC output 6.2VDC 12VDC output 15VDC	(Negative logic) (Option)	DC-DC ON Short or 0V < Vr < 1.2V DC-DC OFF Open or 3 V < Vr < 12V
Zener diode clamp	15VDC output 18VDC 24VDC output 30VDC 28VDC output 36VDC	Input current of Remote control pin	Nominal input -0.5mA ~ + 0.5mA 24VDC input 10mA 48VDC input 5mA
Output indicator	Green LED	Remote off state input current	48VDC input 5mA
Over load protection	% of FL at nominal input 150%, max.	ENVIRONMENTAL SPECIFICATIONS	
Short circuit protection	Continuous, automatics recovery	Operating ambient temperature	-40°C ~ +63°C (without derating) +63°C ~ +87°C (with derating)
GENERAL SPECIFICATIONS		Storage temperature range	-40°C ~ +105°C
Efficiency	See table	Thermal shock	MIL-STD-810F
Isolation voltage	Input to Output 1600 VDC, min. 1minute Input(Output) to Chassis 1600 VDC, min. 1minute	Vibration	MIL-STD-810F
Isolation resistance	500VDC 10 ⁹ ohms, min.	Relative humidity	5% to 95% RH
Isolation capacitance	4500pF, max.	EMC CHARACTERISTICS	
Switching frequency	300kHz±10%	EMI	EN55022 Class B
Design meets safety standard	IEC60950-1, UL60950-1, EN60950-1	ESD	EN61000-4-2 Air Contact ± 8kV ± 6kV Perf. Criteria A
Chassis material	Aluminum	Radiated immunity	EN61000-4-3 10 V/m Perf. Criteria A
Dimensions	4.92 X 2.27 X 0.97 Inch (125.0 X 57.6 X 24.5 mm)	Fast transient	EN61000-4-4 ± 2kV Perf. Criteria A
Weight	182g (6.40oz)	Surge	EN61000-4-5 ± 1kV Perf. Criteria A
MTBF (Note 1)	MIL-HDBK-217F 7.632 x 10 ⁵ hrs	Conducted immunity	EN61000-4-6 10 Vr.m.s Perf. Criteria A

Model Number	Input Range	Output Voltage	Output Current		Output ⁽²⁾ Ripple & Noise	No load ⁽³⁾ Input Current	Eff ⁽⁴⁾ (%)	Capacitor ⁽⁵⁾ Load max
			Min. load	Full load				
DFEC40-24S3P3W	9.5 ~ 36 VDC	3.3 VDC	0mA	10000mA	50mVp-p	83mA	85	25750μF
DFEC40-24S05W	9.5 ~ 36 VDC	5 VDC	0mA	8000mA	50mVp-p	103mA	86	13600μF
DFEC40-24S12W	9.5 ~ 36 VDC	12 VDC	50mA	3333mA	75mVp-p	56mA	85	2360μF
DFEC40-24S15W	9.5 ~ 36 VDC	15 VDC	50mA	2666mA	75mVp-p	56mA	85	1510μF
DFEC40-24S24W	9.5 ~ 36 VDC	24 VDC	65mA	1667mA	100mVp-p	76mA	84	600μF
DFEC40-24S28W	9.5 ~ 36 VDC	28 VDC	50mA	1333mA	100mVp-p	82mA	84	375μF
DFEC40-24D12W	9.5 ~ 36 VDC	± 12 VDC	±65 mA	± 1667mA	100mVp-p	65mA	84	± 1200μF
DFEC40-24D15W	9.5 ~ 36 VDC	± 15 VDC	±50 mA	± 1333mA	100mVp-p	76mA	84	± 750μF
DFEC40-48S3P3W	18 ~ 75 VDC	3.3 VDC	0mA	10000mA	50mVp-p	63mA	85	25750μF
DFEC40-48S05W	18 ~ 75 VDC	5 VDC	0mA	8000mA	50mVp-p	68mA	87	13600μF
DFEC40-48S12W	18 ~ 75 VDC	12 VDC	50mA	3333mA	75mVp-p	34mA	85	2360μF
DFEC40-48S15W	18 ~ 75 VDC	15 VDC	50mA	2666mA	75mVp-p	34mA	86	1510μF
DFEC40-48S24W	18 ~ 75 VDC	24 VDC	65mA	1667mA	100mVp-p	41mA	84	600μF
DFEC40-48S28W	18 ~ 75 VDC	28 VDC	60mA	1333mA	100mVp-p	41mA	84	375μF
DFEC40-48D12W	18 ~ 75 VDC	± 12 VDC	±65 mA	± 1667mA	100mVp-p	34mA	84	± 1200μF
DFEC40-48D15W	18 ~ 75 VDC	± 15 VDC	±60 mA	± 1333mA	100mVp-p	34mA	84	± 750μF

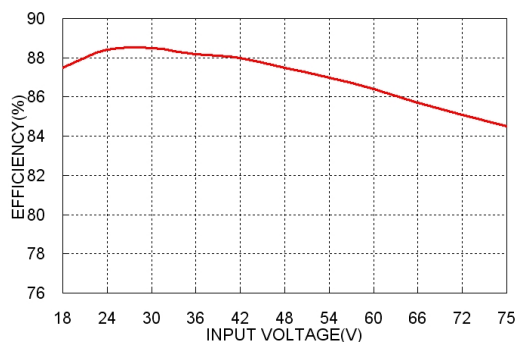
Note

- MIL-HDBK-217F @Ta=25 °C, Full load.
- Typical value at nominal input and full load. (20MHz BW.)
- Typical value at nominal input and no load.
- Typical value at nominal input and full load.
- Test by minimum input and constant resistive load.
- The output requires minimum 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.
- Single output installs a potentiometer to adjust the output voltage.
- Load regulation for dual output : Min load to 100% load balanced on all outputs
- Cross regulation for dual output : asymmetrical load 25% / 100% FL
- The ON/OFF pin voltage is referenced to -INPUT
- To order negative logic ON/OFF control add the suffix-N (Ex:DFEC40-48S05W-N).

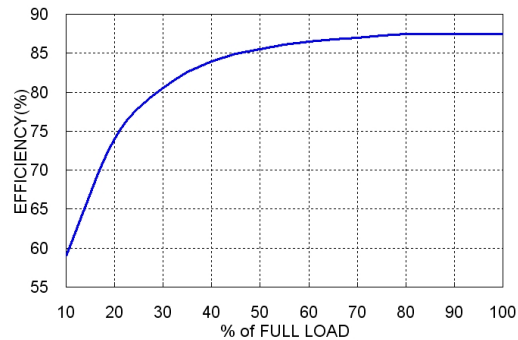
DFEC40-48S05W Derating Curve



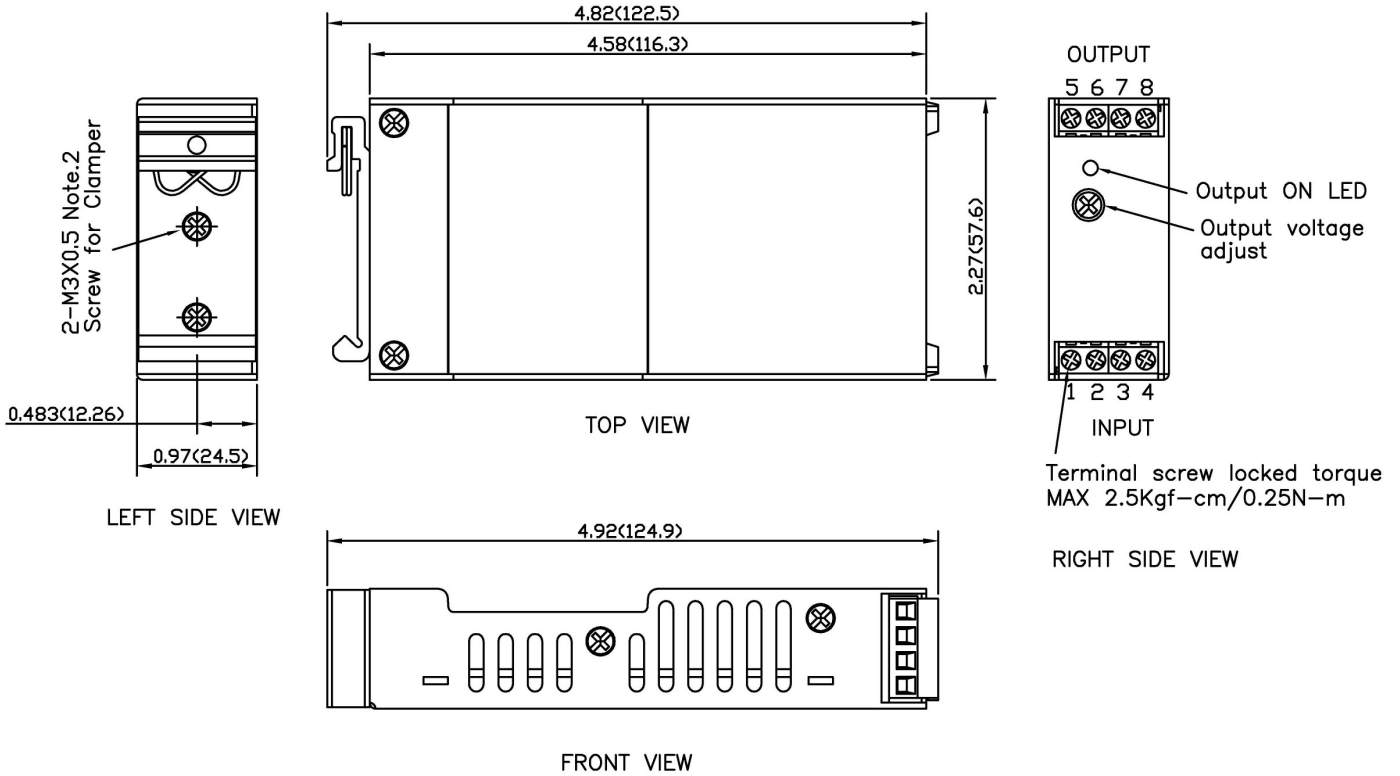
DFEC40-48S05W Efficiency VS Input Voltage



DFEC40-48S05W Efficiency VS Output Current



MECHANICAL DRAWING :



Note: 1.All dimensions in inch(mm)
Tolerance : x.xx±0.02(x.x±0.5)
x.xxx±0.01(x.xx±0.25)
2.The screw locked torque: MAX 5.0kgf-cm/0.49N-m

PIN CONNECTION		
PIN	SINGLE	DUAL
1	CTRL	CTRL
2	-INPUT	-INPUT
3	-INPUT	-INPUT
4	+INPUT	+INPUT
5	NC	NC
6	-OUTPUT	-OUTPUT
7	+OUTPUT	COMMON
8	NC	+OUTPUT

※ NC : No Connection
※ Screw terminals – wire range from 14 to 18 AWG

PRODUCT OPTIONS TABLE	
Option	Suffix
Negative logic Remote ON/OFF	-N