



FEATURES

- DIN Rail DC/DC Converters
- 40 Watts Output Power
- Offer Single And Dual Output
- Meet EN55022 Class B
- Internal input fuse protection
- Internal input reverse polarity protection
- Internal input in-rush current limit circuit
- Overload and short circuit protection
- Over voltage protection
- Compliant to RoHS EU DIRECTIVE 2002/95/EC
- Reliable snap-on for DIN rail TS-35/7.5 OR TS-35/15
- I/O-isolation 1600 VDC
- Case protection meet IP20(IEC60529)
- Output DC-OK indicator

APPLICATIONS

Communication System
Industry Control System
Factory Automatic Equipment
Semiconductor Equipment

DESCRIPTION

The DFEC40 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			
Output power		40 Watts, max	
Voltage accuracy	Single/Dual	± 1.5%	
	Triple(main)	± 2%	
	Triple(auxiliary)	± 5%	
	Single (3.3Vo)	± 2%	
Minimum load (Note 7)		See table	
Voltage adjustability (Note 8)	Single output	± 10%	
	Single/Dual	± 0.5%	
Line regulation	LL to hI at Full load	Triple(main)	± 1%
		Triple(auxiliary)	± 5%
		Single/Dual	±1.5%
		Triple(main)	±2.5%
Load regulation (Note 9)	No load to Full load	Triple(auxiliary)	± 5%
		Single (3.3Vo)	±2%
		Triple(main)	± 2.5%
		Dual/ Triple(auxiliary)	± 5%
Load cross regulation (Note 10)		± 5%	
Ripple and noise	20MHz bandwidth	See table	
Temperature coefficient		±0.02% / °C, max	
Transient response recovery time	25% load step change	250µs	
Over voltage protection	3.3V output	3.9VDC	
	5V output	6.2VDC	
	Zener diode clamp	12V output	15VDC
Output indicator	12V output	18VDC	
	15V output	18VDC	
Over load protection	% of FL at nominal input	150%, max	
Short circuit protection		Hiccup, automatics recovery	
GENERAL SPECIFICATIONS			
Efficiency		See table	
Isolation voltage	Input to Output	1600VDC, min	
	Input(Output) to chassis	1600VDC, min	
Isolation resistance		10 ⁹ ohms, min	
Isolation capacitance		4000pF, max	
Switching frequency		300KHz, typ	
Meet safety standard		IEC60950-1, UL60950-1, EN60950-1	
Chassis material		Aluminum	
Dimensions		4.92 X2.27 X 0.97 Inch (125.0 X 57.6 X 24.5 mm)	
Weight		182g (6.40oz)	
MTBF (Note 1)	BELLCORE TR-NWT-000332	1.062 x 10 ⁶ hrs	
	MIL-HDBK-217F	3.584 x 10 ⁵ hrs	

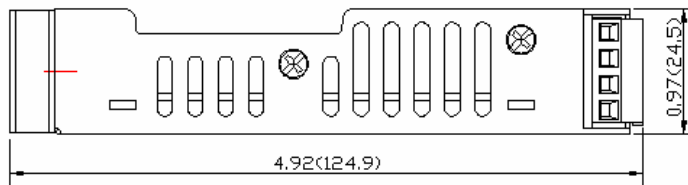
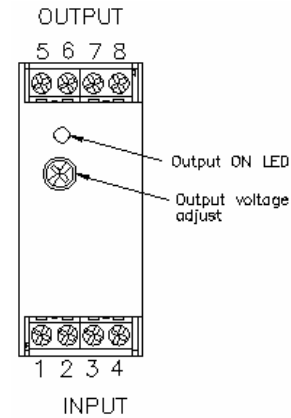
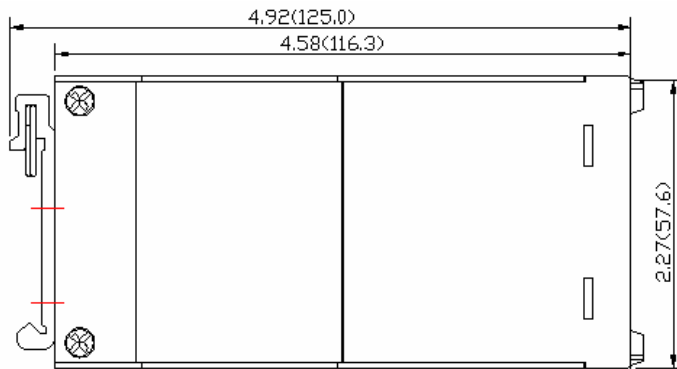
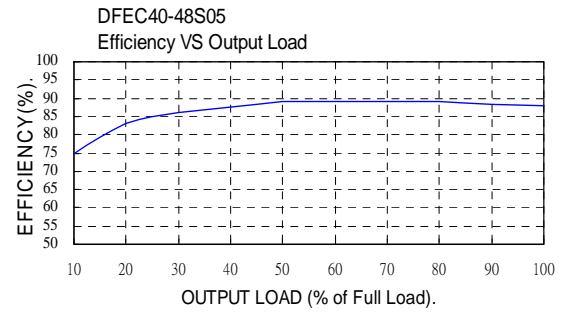
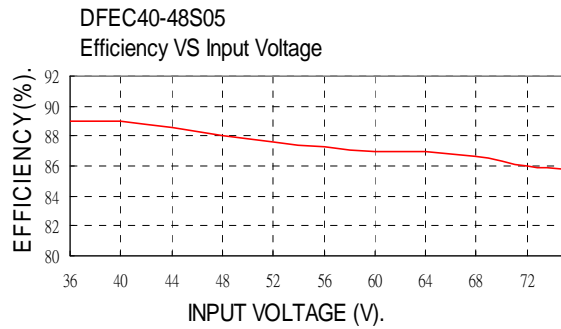
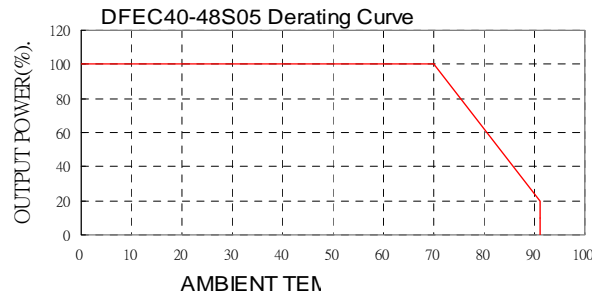
INPUT SPECIFICATIONS		
Input voltage range	12V nominal input	9.5 – 18VDC
	24V nominal input	18 – 36VDC
	48V nominal input	36 – 75VDC
Input surge voltage	12V input	36VDC
	24V input	50VDC
	48V input	100VDC
Input fuse (slow blow)	12V input	8A
	24V input	8A
	48V input	4A
In-rush current	Nominal Vin and full load	15A typ
Input reflected ripple current	Nominal Vin and full load	15mA p-p
Start up time	Nominal Vin and constant resistive load	100ms typ
	Power up Remote ON/OFF	25ms typ
Start-up voltage	12V input	9.5VDC
	24V input	18VDC
	48V input	36VDC
Shutdown voltage	12V input	8VDC
	24V input	16VDC
	48V input	33VDC
Remote ON/OFF (Note 2) (Positive logic) (Standard)	DC-DC ON	Open or 3.5 V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
	Input current of Remote control pin	Nominal Vin
Remote off state input current	Nominal Vin	2.5mA
ENVIRONMENTAL SPECIFICATIONS		
Operating ambient temperature		-40°C ~ +69°C (without derating) +69°C ~ +90°C (with derating)
Storage temperature range		-40°C ~ +105°C
Thermal shock		MIL-STD-810F
Vibration		MIL-STD-810F
Relative humidity		5% to 95% RH
EMC CHARACTERISTICS		
EMI	EN55022	Class B
ESD	EN61000-4-2	Air Contact ± 8KV
		± 6KV
Radiated immunity	EN61000-4-3	10 V/m Perf. Criteria A
Fast transient	EN61000-4-4	± 2KV Perf. Criteria A
Surge	EN61000-4-5	± 1KV Perf. Criteria A
Conducted immunity	EN61000-4-6	10 Vr.m.s Perf. Criteria A



Model Number	Input Range	Output Voltage	Output Current		Output ⁽³⁾ Ripple & Noise	Input Current		Eff ⁽³⁾ (%)	Capacitor ⁽⁶⁾ Load max
			Min. load	Full load		No load ⁽⁴⁾	Full load ⁽⁵⁾		
DFEC40-12S3P3	9.5 – 18 VDC	3.3 VDC	0mA	8000mA	50mVp-p	179mA	2821mA	82	21000µF
DFEC40-12S05	9.5 – 18 VDC	5 VDC	0mA	8000mA	50mVp-p	232mA	4274mA	82	13600µF
DFEC40-12S12	9.5 – 18 VDC	12 VDC	0mA	3333mA	75mVp-p	262mA	4274mA	82	2360µF
DFEC40-12S15	9.5 – 18 VDC	15 VDC	0mA	2666mA	75mVp-p	320mA	4218mA	83	1510µF
DFEC40-12D12	9.5 – 18 VDC	± 12 VDC	0mA	± 1800mA	120mVp-p	37mA	4675mA	81	± 1200µF
DFEC40-12D15	9.5 – 18 VDC	± 15 VDC	0mA	± 1400mA	150mVp-p	45mA	4545mA	81	± 750µF
DFEC40-12T3312	9.5 – 18 VDC	3.3 / ±12 VDC	600mA / ±40mA	6000mA / ±400mA	50 / 75mVp-p	222mA	3223mA	80	13000 / ±330µF
DFEC40-12T3315	9.5 – 18 VDC	3.3 / ±15 VDC	600mA / ±30mA	6000mA / ±300mA	50 / 75mVp-p	237mA	3158mA	80	13000 / ±110µF
DFEC40-12T0512	9.5 – 18 VDC	5 / ±12 VDC	600mA / ±40mA	6000mA / ±400mA	50 / 75mVp-p	287mA	4231mA	82	6800 / ±330µF
DFEC40-12T0515	9.5 – 18 VDC	5 / ±15 VDC	600mA / ±30mA	6000mA / ±300mA	50 / 75mVp-p	287mA	4167mA	82	6800 / ±110µF
DFEC40-24S3P3	18 – 36 VDC	3.3 VDC	0mA	8000mA	50mVp-p	67mA	1375mA	84	21000µF
DFEC40-24S05	18 – 36 VDC	5 VDC	0mA	8000mA	50mVp-p	82mA	2033mA	86	13600µF
DFEC40-24S12	18 – 36 VDC	12 VDC	0mA	3333mA	75mVp-p	87mA	2057mA	85	2360µF
DFEC40-24S15	18 – 36 VDC	15 VDC	0mA	2666mA	75mVp-p	92mA	2032mA	86	1510µF
DFEC40-24D12	18 – 36 VDC	± 12 VDC	0mA	± 1800mA	120mVp-p	27mA	2250mA	84	± 1200µF
DFEC40-24D15	18 – 36 VDC	± 15 VDC	0mA	± 1400mA	150mVp-p	27mA	2188mA	84	± 750µF
DFEC40-24T3312	18 – 36 VDC	3.3 / ±12 VDC	600mA / ±40mA	6000mA / ±400mA	50 / 75mVp-p	67mA	1571mA	82	13000 / ±330µF
DFEC40-24T3315	18 – 36 VDC	3.3 / ±15 VDC	600mA / ±30mA	6000mA / ±300mA	50 / 75mVp-p	67mA	1538mA	82	13000 / ±110µF
DFEC40-24T0512	18 – 36 VDC	5 / ±12 VDC	600mA / ±40mA	6000mA / ±400mA	50 / 75mVp-p	67mA	2063mA	84	6800 / ±330µF
DFEC40-24T0515	18 – 36 VDC	5 / ±15 VDC	600mA / ±30mA	6000mA / ±300mA	50 / 75mVp-p	77mA	2031mA	84	6800 / ±110µF
DFEC40-48S3P3	36 – 75 VDC	3.3 VDC	0mA	8000mA	50mVp-p	42mA	671mA	86	21000µF
DFEC40-48S05	36 – 75 VDC	5 VDC	0mA	8000mA	50mVp-p	44mA	992mA	88	13600µF
DFEC40-48S12	36 – 75 VDC	12 VDC	0mA	3333mA	75mVp-p	54mA	1004mA	87	2360µF
DFEC40-48S15	36 – 75 VDC	15 VDC	0mA	2666mA	75mVp-p	57mA	1004mA	87	1510µF
DFEC40-48D12	36 – 75 VDC	± 12 VDC	0mA	± 1800mA	120mVp-p	20mA	1111mA	85	± 1200µF
DFEC40-48D15	36 – 75 VDC	± 15 VDC	0mA	± 1400mA	150mVp-p	20mA	1089mA	85	± 750µF
DFEC40-48T3312	36 – 75 VDC	3.3 / ±12 VDC	600mA / ±40mA	6000mA / ±400mA	50 / 75mVp-p	42mA	766mA	84	13000 / ±330µF
DFEC40-48T3315	36 – 75 VDC	3.3 / ±15 VDC	600mA / ±30mA	6000mA / ±300mA	50 / 75mVp-p	42mA	750mA	84	13000 / ±110µF
DFEC40-48T0512	36 – 75 VDC	5 / ±12 VDC	600mA / ±40mA	6000mA / ±400mA	50 / 75mVp-p	42mA	1006mA	86	6800 / ±330µF
DFEC40-48T0515	36 – 75 VDC	5 / ±15 VDC	600mA / ±30mA	6000mA / ±300mA	50 / 75mVp-p	47mA	991mA	86	6800 / ±110µF

Note

- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
- The ON/OFF control pin voltage is referenced to -Vin.
- Typical value at nominal input voltage and full load.
- Typical value at nominal input voltage and no load.
- Maximum value at nominal input voltage and full load.
- Test by minimum Vin and constant resistive load.
- The output requires minimum loading on the output to maintain specified regulation. Operation in 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 triple output:
Main output(V1): 10% to 100% with 10% to 100% balanced on auxiliaries.
Auxiliary outputs(V2 and V3): 10% to 100% balanced on all outputs
- Cross regulation for dual output: asymmetrical load 25% / 100% FL.
Cross regulation for triple output:
Main output 100% load, auxiliary 100%, other auxiliary 25% to 100%.
Auxiliary outputs(V2 and V3): main output 100% load, auxiliary 100%, other auxiliary 25% to 100% or main output 25%, auxiliary 25%, other auxiliary 25% to 100%



All dimensions in Inches (mm)
Tolerance: X.XX±0.04 (X.X±1.0)
X.XXX±0.02 (X.XX±0.5)

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

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



ELECTRONIC COMPONENTS

RSG Electronic Components GmbH ■ Sprendlinger Landstr. 115 ■ D-63069 Offenbach / Germany
Tel. +49.69.984047-0 ■ Fax +49.69.984047-77 ■ info@rsg-electronic.de ■ www.rsg-electronic.de

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