



Unit measures 2.0"W x 2.0"L x 0.4"H

- Wide 2 : 1 Input Range
- High Efficiency
- Regulated Outputs
- 1600V Isolation
- Full EMI Shielding
- L-C Type Input Filter

Model Number	Output Voltage	Output Amps	Input Range	Efficiency	Ripple & Noise
<b>SINGLE OUTPUT</b>					
FEC40-24S3P3	3.3 VDC	8	18-36 VDC	50mV Pk-Pk	87%
FEC40-48S3P3		8	36-75 VDC	50mV Pk-Pk	88%
FEC40-24S05	5 VDC	8	18-36 VDC	50mV Pk-Pk	89%
FEC40-48S05		8	36-75 VDC	50mV Pk-Pk	90%
FEC40-24S12	12 VDC	3.33	18-36 VDC	75mV Pk-Pk	88%
FEC40-48S12		3.33	36-75 VDC	75mV Pk-Pk	89%
FEC40-24S15	15 VDC	2.66	18-36 VDC	75mV Pk-Pk	89%
FEC40-48S15		2.66	36-75 VDC	75mV Pk-Pk	89%
<b>DUAL OUTPUT</b>					
FEC40-24D3305	3.3 / 5 VDC	4 / 4	18-36 VDC	100mV Pk-Pk	84%
FEC40-48D3305		4 / 4	36-75 VDC	100mV Pk-Pk	85%
<b>TRIPLE OUTPUT</b>					
FEC40-24T3312	3.3, +/-12 VDC	6, +/-0.40	18-36 VDC	50 / 75mV Pk-Pk	85%
FEC40-48T3312		6, +/-0.40	36-75 VDC	50 / 75mV Pk-Pk	86%
FEC40-24T3315	3.3, +/-15 VDC	6, +/-0.30	18-36 VDC	50 / 75mV Pk-Pk	85%
FEC40-48T3315		6, +/-0.30	36-75 VDC	50 / 75mV Pk-Pk	86%
FEC40-24T0512	5, +/-12 VDC	6, +/-0.40	18-36 VDC	50 / 75mV Pk-Pk	87%
FEC40-48T0512		6, +/-0.40	36-75 VDC	50 / 75mV Pk-Pk	88%
FEC40-24T0515	5, +/-15 VDC	6, +/-0.30	18-36 VDC	50 / 75mV Pk-Pk	87%
FEC40-48T0515		6, +/-0.30	36-75 VDC	50 / 75mV Pk-Pk	88%



Isolated and Regulated 40 WATT Modular DC/DC Converters

**FEC40 series**

**INPUT SPECIFICATIONS**

Input Voltage Ranges:	24 VDC Nominal	18-36 VDC
	48 VDC Nominal	36-75 VDC
Input Filter (Note 6)	L-C Type	
Under Voltage Lockout	24V Input	DC-DC On: 17.8V DC-DC Off: 16V
	48V Input	DC-DC On: 36V DC-DC Off: 34V
Input Voltage Variation dv/dt	5V / mS, max. (Complies with ETS300 132 part 4.4)	
Input Surge Voltage 100mS max.	24V Input	50VDC
	48V Input	100VDC
Input Reflected Ripple (Note 7)	Nom I/P and FL	40mA Pk-Pk
Start Up Time	Nom. I/P and Static Resistive Load 25mS, typ.	
Remote ON/OFF (Note 8)	DC-DC On: Open or 3.5V < Vr < 12V	
	DC-DC Off: Short or 0V < Vr < 1.2V	
Remote Off Input Current	Nom. Input:	2.5mA

**OUTPUT SPECIFICATIONS**

Output Power	40 Watts Max.	
Voltage and Current	See Selection Chart	
O/P Accuracy (FL & Nom I/P)	single/dual; +/- 1%	
	Triple Main: +/-1%	
	Triple Aux.: +/-3%	
Voltage Adjust (Note 1)	+/-10%	
Min. Load-Triple Only (Note 2)	10%	
Load Regulation-10%-FL (Note 3)	singles: +/-0.5%	
	duals: +/-1%	
	Triple Main: +/-2%	
Line Regulation	Triple Aux.: +/-5%	
	single/dual; +/- 0.5%	
	Triple Main: +/-1%	
Cross Regulation (Note 4)	Triple Aux.: +/-5%	
	single/dual/triple main +/-1%	
Temperature Coefficient	triple aux. +/-5%	
	+/-0.02%/DegC, Max.	
Ripple/Noise (Note 5)	See Selection Chart	
Transient Response	(25% Load Step)	400uS
Voltage Stability	(singles/duals)	+/- 2%
	(triples)	5 V: +/-2%, Aux: +/-5%
Over Load Protection	FL, Nom. I/P: 150% Max.	
Short Circuit Protection	Hiccup, Auto Recovery	

\* These are stress ratings. Exposure of the devices to any of these conditions may adversely affect long term reliability. Proper operation under conditions other than the standard operating conditions is neither warranted nor implied.

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OVP Threshold, Zener Diode Clamp:

3.3V Output	3.9Volts
5V Output	6.2Volts
12V Output	15Volts
15V Output	18Volts

**GENERAL SPECIFICATIONS**

Input-Out Isolation	1600VDC
Isolation Resistance	10-9nth Ohms
Isolation Capacitance	1000pF, Max.
Efficiency	See Selection Chart
Switching Frequency (Note 9)	300Khz, typ

**ENVIRONMENTAL SPECIFICATIONS**

Oper. Temperature	-40 to +85°C with derate	
Storage Temperature	-55 to +105°C *	
Relative Humidity	5 to 95% RH *	
Maximum Case Temp	100°C *	
Over Temp. Protection	115°C, typ.	
Thermal Impedance (Note 11)	Convection:	9.2°C/Watt
	Heat Sink w. 20LFM	8.5°C/Watt
	Heat Sink w. 500LFM	2.8°C/Watt
Thermal Shock	MIL-STD-810D	
Vibration	10-55Hz, 2G, 30 Minutes	
	along X, Y and Z Axes	
MTBF (Note 10)	1.398 MHrs	

**PHYSICAL SPECIFICATIONS**

Case Material	Nickel-Coated Copper
	Non-Conductive Base
Construction	Fully Encapsulated with
	UL94-VO Epoxy
Dimensions	2.0" x 2.0" x 0.40"
Weight	2.11 oz, (60g)

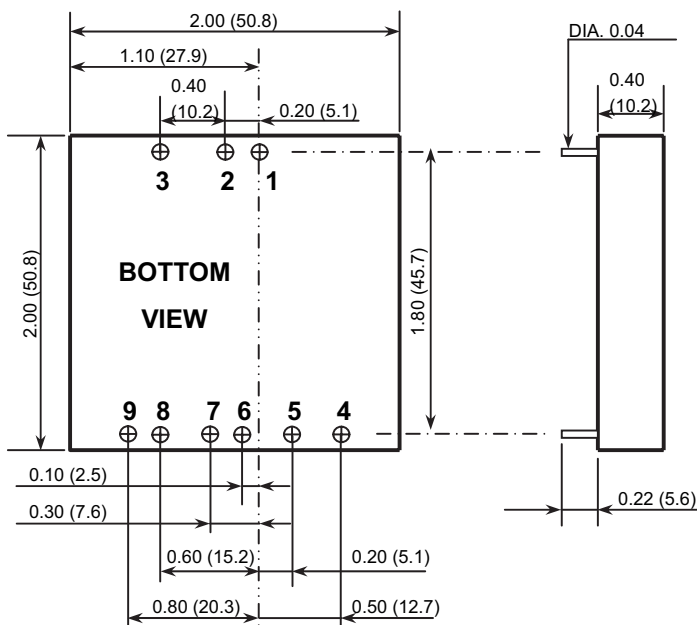
All specifications are typical at nominal input, full load, and 25DegC unless otherwise noted

**300 Myles Standish Blvd., Taunton, MA 02780**  
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### Notes:

- Maximum output deviation is 10% inclusive of remote sense and him. If remote sense is not being used, the +Vsense should be connected to its corresponding +OUTPUT and likewise the sense should be connected to its corresponding -OUTPUT.
- Triple outputs requires 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 specifications
- 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 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%.
- The models of FEC40-XXD3305 are specified with a 1uF ceramic output capacitors.
- An external filter capacitor is required for normal operation. The capacitor should be capable of handling 1A ripple current for 48V/24V models. Astrodyne suggests: Nippon chemi-con KMF series, 220µF/100V, ESR 90mΩ.
- Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
- The ON/OFF control pin voltage is referenced to negative Input.
- Switching frequency for dual output: Master (5Vo) 300KHz; Slave (3.3Vo) 500KHz
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment).
- Heat sink is optional and P/N: 7G-0026A.
- Any condition of dual output (3.3V/5V) rated lout current, not to exceed 8A of total output currents.
- Maximum value at nominal input voltage and full load.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistor load.

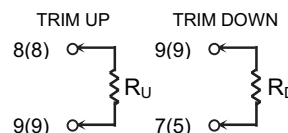
### MECHANICAL DIMENSIONS



- All dimensions in Inches (mm)  
Tolerance: X.XX±0.02 (X.X±0.5)  
X.XXX±0.01 (X.XX±0.25)
- Pin pitch tolerance ±0.014(0.35)

Pin#	Single	Dual	Triple
1	+INPUT	+INPUT	+INPUT
2	-INPUT	-INPUT	-INPUT
3	CTRL	CTRL	CTRL
4	NC	3.3V	+AUX
5	-SENSE (note 1)	3.3V RTN (COM)	COMMON
6	+SENSE (note 1)	NC	-AUX
7	+OUTPUT	NC	+OUTPUT
8	-OUTPUT	5V	-OUTPUT (COM)
9	TRIM	5V RTN (COM)	NC

### EXTERNAL OUTPUT TRIMMING



*Astrodyne products are not authorized or warranted for use as critical components in life support systems, equipment used in hazardous environments, nuclear controls systems, or other mission-critical applications.*

### OUTPUT DERATING CURVE

