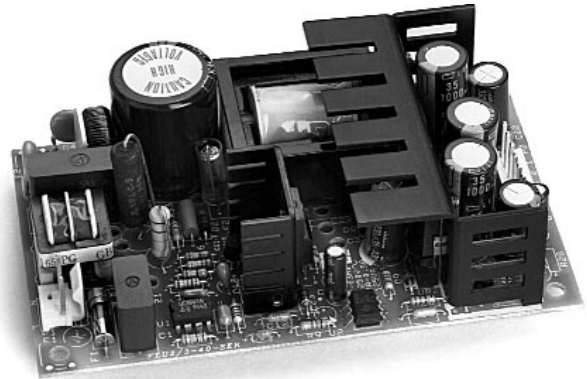


40W

OPEN-FRAME SWITCHING POWER SUPPLIES

- Single, Dual and Triple Output Models
- Universal AC-Input and DC-Input Models
- CE Mark: UL/CSA/EN60950 Approvals
- BAPT Approvals
- Austel CCL Certification
- Models with UL544/CSA C22.2-601/EN60-601 Medical Safety Approvals
- EN55022/FCC Class B Input Line Filter
- 0% Minimum Load Requirement
- Over-Current/Short-Circuit Protection
- 2-Year Warranty
- Minimum 200,000-Hour MTBF



CHARACTERISTICS

Input Voltage	FLU and MDU models, universal input range 85-265 VAC single phase or 100-370 VDC. DC-input models, 36-75 VDC (48V, nominal).
Input Line Frequency	47-440 Hz (ac input models).
Input Line Protection	MOV transient protected (FLU and MDU series). Input line fuse provided on-board. (See Note 1.)
EMI Filter	Standard. Performance surpasses conducted EMI requirements of EN55022/FCC Class B by 10 dB, typ.
DC Output	See table. (Note 2.)
Continuous Output Power	40W, maximum.
Leakage Current	MDU Series, non-patient contact rating: 500 μ A, maximum.
Output Voltage Adjust	Primary output adjustable \pm 5%. Auxiliary outputs fixed.
Efficiency	62-75%, typical (nominal input line voltage, nominal load conditions).
Hold-Up Time	FLU and MDU models: 16 ms (115 VAC input), 32 ms (230 VAC input), minimum, at full load
Overload Protection	Power-limit circuit.
Short-Circuit Protection	Continuous.
Over-Voltage Protection	Primary output only.
Soft Start	Standard on all models.
Design Topology	Flyback converter with current-mode control.
Frequency of Operation	40 kHz (fixed).
Hi-Pot Isolation	FLU Series: 5300 VDC, input-to-output for one minute. (Note 3.) MDU Series: 5700 VDC, input-to-output for one minute. (Note 3.)
Noise, Ripple and Spike	1% peak-to-peak, maximum. (See Note 5.)
Temperature Range	-20°C to +70°C.
Output Power De-Rating	De-rate output power and current linearly 2%/°C from +50°C to +70°C.
Temperature Coefficient	\pm 0.05%/°C over the entire operating temperature range.
Relative Humidity	0 to 95%, non-condensing.
Altitude	0 to 10,000 feet.
Cooling	Convection cooling is adequate. Moving air is recommended for operation in a confined area.
Storage Temperature	-40°C to +85°C.
Storage Humidity	0 to 95%, non-condensing.
Mean Time Between Failures	>200,000 hours. (Note 6.)

Model	Output Voltage Output (V)	Output Current			Output Voltage Tol.	Line Reg.	Load Reg.	Cross-Reg.
		Min. (A)	Nom. (A)	Max. (A)				
AC-DC Singles 85-265 VAC Input								
FLU1-40-1AD	V1 5	0.0	8.00	8.00	1.0%	0.1%	0.2%	—
FLU1-40-2AD	V1 9	0.0	4.40	4.40	1.0%	0.1%	0.2%	—
FLU1-40-3AD	V1 12	0.0	3.30	3.30	1.0%	0.1%	0.2%	—
FLU1-40-4AD	V1 15	0.0	2.70	2.70	1.0%	0.1%	0.2%	—
FLU1-40-5AD	V1 24	0.0	1.70	1.70	1.0%	0.1%	0.2%	—
FLU1-40-6AD	V1 28	0.0	1.40	1.40	1.0%	0.1%	0.2%	—
AC-DC Singles To UL544/EN60-601/CSA 22.2-601.1								
MDU1-40-1AD	V1 5	0.0	8.00	8.00	1.0%	0.1%	0.2%	—
MDU1-40-2AD	V1 9	0.0	4.40	4.40	1.0%	0.1%	0.2%	—
MDU1-40-3AD	V1 12	0.0	3.30	3.30	1.0%	0.1%	0.2%	—
MDU1-40-4AD	V1 15	0.0	2.70	2.70	1.0%	0.1%	0.2%	—
MDU1-40-5AD	V1 24	0.0	1.70	1.70	1.0%	0.1%	0.2%	—
MDU1-40-6AD	V1 28	0.0	1.40	1.40	1.0%	0.1%	0.2%	—
AC-DC Duals 85-265 VAC Input								
FLU2-40-1AD	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +12	0.0	2.00	3.00	5.0%	0.5%	3.0%	4.0%
FLU2-40-2AD	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +15	0.0	1.70	2.00	5.0%	0.5%	3.0%	4.0%
FLU2-40-3AD	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +24	0.0	1.00	1.50	5.0%	0.5%	3.0%	4.0%
FLU2-40-4AD	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +28	0.0	1.00	1.00	5.0%	0.5%	3.0%	4.0%
FLU2-40-5AD	V1 5(ISO)	0.0	6.00	6.00	1.0%	0.2%	1.0%	—
	V2 5(ISO)	0.0	2.00	2.00	3.0%	0.5%	1.0%	1.0%
FLU2-40-6AD	V1 12(ISO)	0.0	2.00	3.00	1.0%	0.2%	1.0%	—
	V2 12(ISO)	0.0	1.00	2.00	3.0%	0.5%	1.0%	1.0%
FLU2-40-7AD	V1 15(ISO)	0.0	1.50	2.50	1.0%	0.2%	1.0%	—
	V2 15(ISO)	0.0	1.20	2.00	3.0%	0.5%	1.0%	1.0%
AC-DC Duals To UL544/EN60-601/CSA 22.2-601.1								
MDU2-40-1AD	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +12	0.0	2.00	3.00	5.0%	0.5%	3.0%	4.0%
MDU2-40-2AD	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +15	0.0	1.70	2.00	5.0%	0.2%	3.0%	4.0%
MDU2-40-3AD	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +24	0.0	1.00	1.50	5.0%	0.2%	3.0%	4.0%
MDU2-40-4AD	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +28	0.0	1.00	1.00	5.0%	0.5%	3.0%	4.0

40W

OPEN-FRAME SWITCHING POWER SUPPLIES

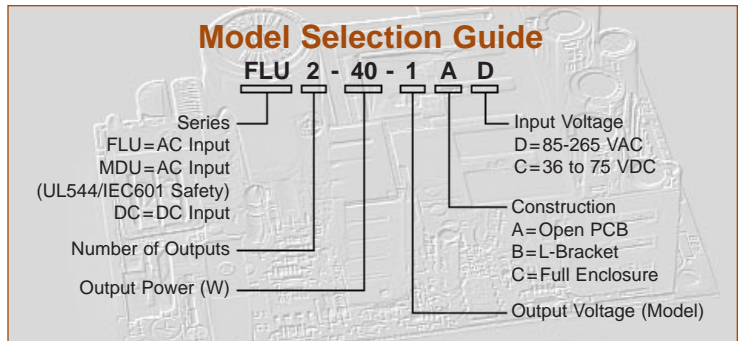
Model	Output Voltage Output (V)	Output Current			Output Voltage Tol.	Line Reg.	Load Reg.	Cross-Reg.
		Min. (A)	Nom. (A)	Max. (A)				
DC-DC Duals 36-75 VDC Input								
DC2-40-1AC	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +12	0.0	2.00	3.00	5.0%	0.5%	3.0%	4.0%
DC2-40-2AC	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +15	0.0	1.70	2.00	5.0%	0.2%	3.0%	4.0%
DC2-40-3AC	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +24	0.0	1.00	1.50	5.0%	0.2%	3.0%	4.0%
DC2-40-4AC	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
	V2 +28	0.0	1.00	1.00	5.0%	0.5%	3.0%	4.0%
AC-DC Triples 85-265 VAC Input								
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
FLU3-40-1AD	V2 +12	0.0	1.50	3.00*	5.0%	1.0%	3.0%	4.0%
	V3 -12	0.0	0.50	0.70	5.0%	0.2%	1.0%	1.0%
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
FLU3-40-2AD	V2 +12	0.0	1.50	3.00*	5.0%	1.0%	3.0%	4.0%
	V3 -5	0.0	1.00	1.00	3.0%	0.2%	1.0%	1.0%
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
FLU3-40-3AD	V2 +15	0.0	1.20	2.00†	5.0%	1.0%	3.0%	4.0%
	V3 -15	0.0	0.50	0.60	5.0%	0.2%	1.0%	1.0%
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
FLU3-40-4AD	V2 +24	0.0	0.75	1.50§	5.0%	1.0%	3.0%	4.0%
	V3 -12	0.0	0.50	0.70	5.0%	0.2%	1.0%	1.0%
	V1 5(ISO)	0.0	5.00	6.00	1.0%	0.2%	0.5%	—
FLU3-40-5AD	V2 12(ISO)	0.0	0.30	0.50	4.0%	0.5%	1.0%	1.0%
	V3 12(ISO)	0.0	0.30	0.50	4.0%	0.5%	1.0%	1.0%
	V1 5(ISO)	0.0	5.00	6.00	1.0%	0.2%	0.5%	—
FLU3-40-6AD	V2 15(ISO)	0.0	0.30	0.50	4.0%	0.5%	1.0%	1.0%
	V3 15(ISO)	0.0	0.30	0.50	4.0%	0.5%	1.0%	1.0%

Model	Output Voltage Output (V)	Output Current			Output Voltage Tol.	Line Reg.	Load Reg.	Cross-Reg.
		Min. (A)	Nom. (A)	Max. (A)				
AC-DC Triples To UL544/EN60-601/CSA 22.2-601.1								
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
MDU3-40-1AD	V2 +12	0.0	1.50	3.00*	5.0%	1.0%	3.0%	4.0%
	V3 -12	0.0	0.50	0.70	5.0%	0.2%	1.0%	1.0%
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
MDU3-40-2AD	V2 +12	0.0	1.50	3.00*	5.0%	1.0%	3.0%	4.0%
	V3 -5	0.0	1.00	1.00	3.0%	0.2%	1.0%	1.0%
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
MDU3-40-3AD	V2 +15	0.0	1.20	2.00†	5.0%	1.0%	3.0%	4.0%
	V3 -15	0.0	0.50	0.60	5.0%	0.2%	1.0%	1.0%
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
MDU3-40-4AD	V2 +24	0.0	0.75	1.50§	5.0%	1.0%	3.0%	4.0%
	V3 -12	0.0	0.50	0.70	5.0%	0.2%	1.0%	1.0%
DC-DC Triples 36-75 VDC Input								
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
DC3-40-1AC	V2 +12	0.0	1.50	3.00*	5.0%	1.0%	3.0%	4.0%
	V3 -12	0.0	0.50	0.70	5.0%	0.2%	1.0%	1.0%
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
DC3-40-2AC	V2 +12	0.0	1.50	3.00*	5.0%	1.0%	3.0%	4.0%
	V3 -5	0.0	1.00	1.00	3.0%	0.2%	1.0%	1.0%
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
DC3-40-3AC	V2 +15	0.0	1.20	2.00†	5.0%	1.0%	3.0%	4.0%
	V3 -15	0.0	0.50	0.60	5.0%	0.2%	1.0%	1.0%
	V1 +5	0.0	3.00	5.00	1.0%	0.2%	1.0%	—
DC3-40-4AC	V2 +24	0.0	0.75	1.50§	5.0%	1.0%	3.0%	4.0%
	V3 -12	0.0	0.50	0.70	5.0%	0.2%	1.0%	1.0%

* Peak output current rating = 5.0A (<60 seconds, duty cycle <10%).
† Peak output current rating = 3.0A (<60 seconds, duty cycle <10%).
§ Peak output current rating = 2.0A (<60 seconds, duty cycle <10%).

Notes

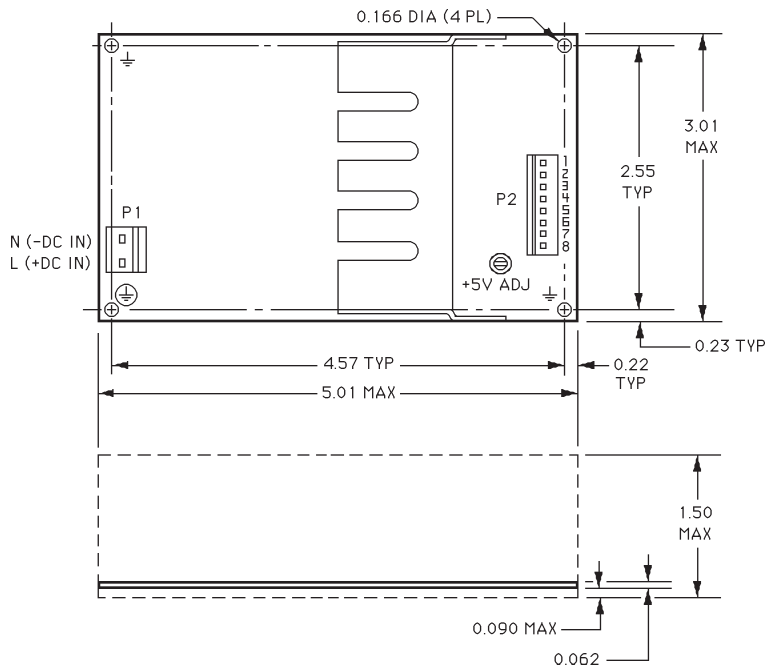
- Replace the input line fuse with the same type and rating. Recommended: 2A/250V slow-blow fuse.
- The sum of primary and auxiliary output currents from triple output models -1AD through -4AD must not exceed 5.0A.
- Hi-pot isolation is 2200 VDC from the input of the supply to ground for 60 seconds.
- All measurements are made directly at the terminals of the power supply.
- Peak-to-peak and RMS metering equipment must have a 20 MHz frequency response with probes and cables that maintain a frequency response of 20 Hz to 20 MHz. Output ripple and spikes are measured directly at the output terminals of the power supply with a 0.1 µF ceramic capacitor. The probe ground band must make direct contact with the output return or common terminal to prevent erroneous noise measurements.
- MTBF is calculated using the parts stress method in MIL-HDBK 217F (ground benign, TA = +25°C).
- Output voltage tolerance is measured under nominal load current conditions.
- Line regulation is measured under nominal load conditions as the input voltage is varied from 85 to 265 VAC (ac-input models) or from 36 to 75 VDC (dc-input models).
- Load regulation is measured at 115 VAC or 230 VAC. For single output models, load regulation is measured while output current is varied from 0% to 100% of full load. With multiple output models, the output under test is brought to 60%



- of nominal load; load current is then varied +40%/-30% of nominal while other outputs are held at nominal load conditions.
- Cross-regulation is tested by changing the load on the primary output from 50% to 100% of nominal load while measuring the voltage change on the auxiliary output under test.
- The FLU1-40, FLU2-40 and FLU3-40 series are approved to UL1950 (File E140439), CSA22.2 No. 234 (File LR52335), EN60950/IEC950/DIN VDE 0805 (TÜV Licenses R679206, R0097621, R9071501), and Austel CCL (Certificate A92/PS/004).
- The FLU3-40 series has BABT/EN41003 approval ((NS/4199/123/R/604674).
- The MDU1-40, MDU2-40 and MDU3-40 series are approved to UL544 (File E151357), CSA 22.2 No. 601.1 (File LR52335) and EN60-601/IEC601-1/DIN VDE 0750 (TÜV Licenses R9271474, R9271475, R9271476).
- The DC2-40 and DC3-40 series are approved to UL1950 (File E140439), CSA22.2 No. 234 (File LR52335), and EN60950/IEC950/DIN VDE 0805 (TÜV License R9071501).

40W

OPEN-FRAME SWITCHING POWER SUPPLIES



FLU/MDU/DC 40W SERIES

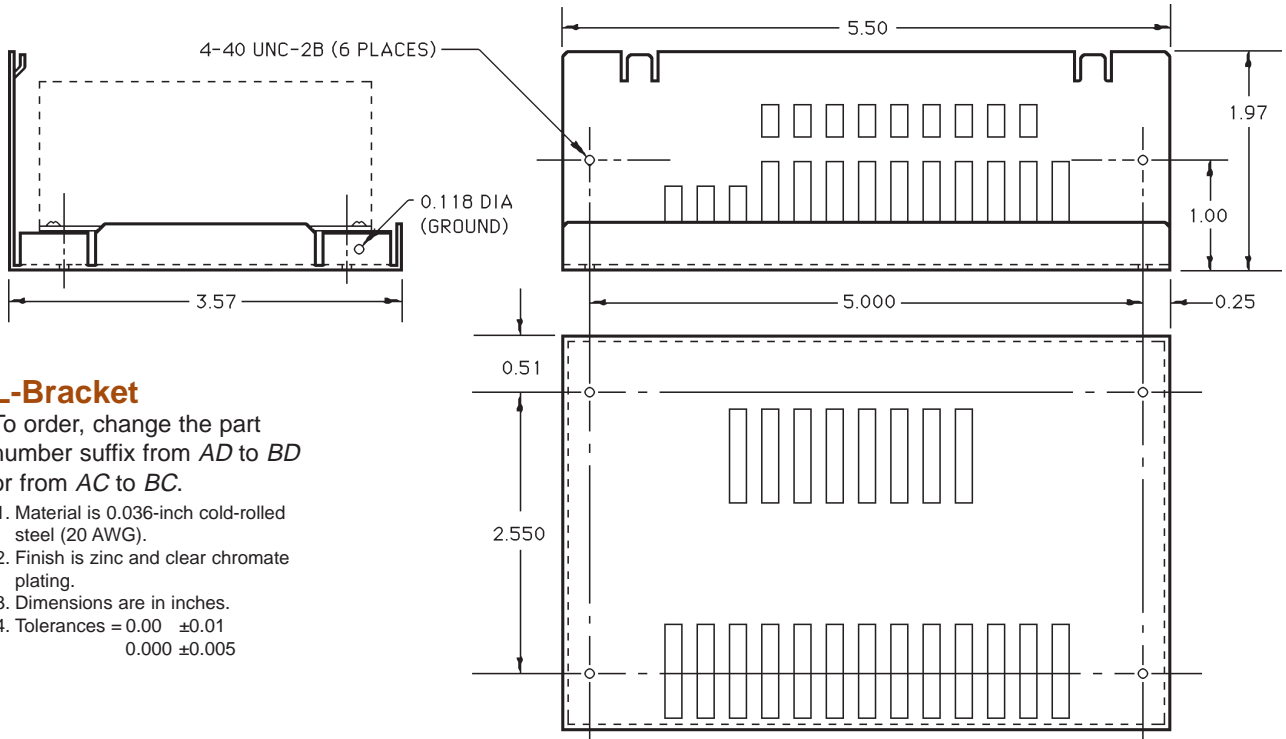
- A. Dimensions shown are in inches.
- B. Tolerances = 0.00 ±0.01 inch.
0.000 ±0.005 inch.
- C. P1 input connectors are Molex 26-62-4030. The mating connector combines Molex housing 43061-0003 and crimp terminal 08-70-1030.
- D. P2 output connectors for the 40W series, except for models 5 and 6 of the FLU3-40 series, are Molex 26-60-4060. The mating connector combines Molex housing 43061-0006 and crimp terminal 08-70-1030. Models 5 and 6 of the FLU3-40 series use Molex 26-60-4080 for the P2 connector. The mating connector uses Molex housing 43061-0008 and crimp terminals 08-70-1030.

Pin-Out

Pin	FLU2-40		FLU2-40		FLU3-40		FLU3-40		FLU3-40	
	FLU1-40	MDU1-40	Models 1-4	Models 5-7	MDU2-40	DC2-40	Models 1-4	Models 5-6	MDU3-40	DC3-40
1	V1	V1	V2	+V1(ISO)	V2	V2	V2	+V2(ISO)	V2	V2
2	V1	V1	V1	+V1(ISO)	V1	V1	V1	- V2(ISO)	V1	V1
3	V1	V1	V1	- V1(ISO)	V1	V1	V1	+V1(ISO)	V1	V1
4	Return	Return	Common	- V1(ISO)	Common	Common	Common	+V1(ISO)	Common	Common
5	Return	Return	Common	- V2(ISO)	Common	Common	Common	- V1(ISO)	Common	Common
6	Return	Return	N/C	+V2(ISO)	N/C	N/C	V3	- V1(ISO)	V3	V3
7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	+V3(ISO)	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	- V3(ISO)	N/A	N/A

40W

POWER SUPPLY ENCLOSURES



L-Bracket

To order, change the part number suffix from *AD* to *BD* or from *AC* to *BC*.

1. Material is 0.036-inch cold-rolled steel (20 AWG).
2. Finish is zinc and clear chromate plating.
3. Dimensions are in inches.
4. Tolerances = 0.00 ±0.01
0.000 ±0.005

L-Bracket and Cover

To order full enclosure, change the part number suffix from *AD* to *CD* or from *AC* to *CC*.

1. Material is 0.036-inch cold-rolled steel (20 AWG).
2. Finish is zinc and clear chromate plating.
3. Dimensions are in inches.
4. Tolerances = 0.00 ±0.01
0.000 ±0.005

