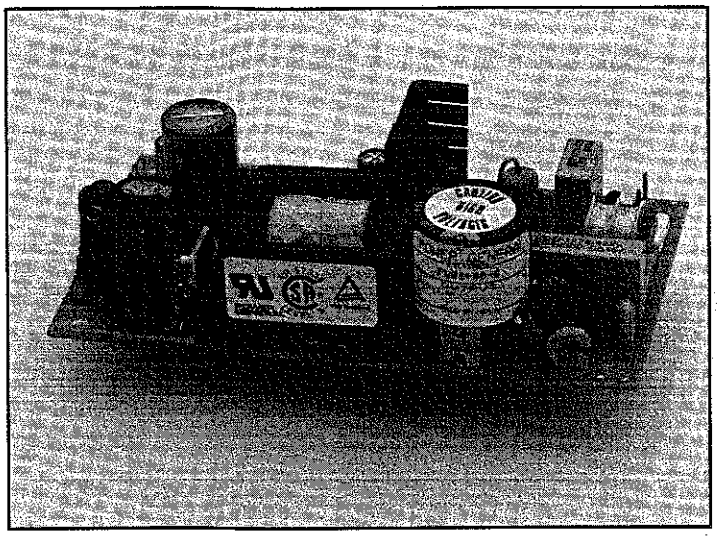
40W SINGLE OUTPUT SWITCHING POWER SUPPLIES
—UNIVERSAL INPUT RANGE, ULTRA-HIGH RELIABILITY—

FEATURES

- Universal Input Voltage Range
- 40 Watts Continuous Output Power
- UL1950 Approved
- CSA C22.2-220 Approved
- Meets VDE0805
- TUV/EN60950/IEC950 Approved
- Austel CCL Certified
- VDE/FCC Class B Input Line Filter
- 0% Minimum Load Requirement
- Over-Current/Short-Circuit Protection
- 2-Year Warranty
- **Minimum 220,000 Hours MTBF**



APPLICATIONS

- Data Communications Equipment
- Disk and Tape Drive Subsystems
- Printers
- CRT Terminals

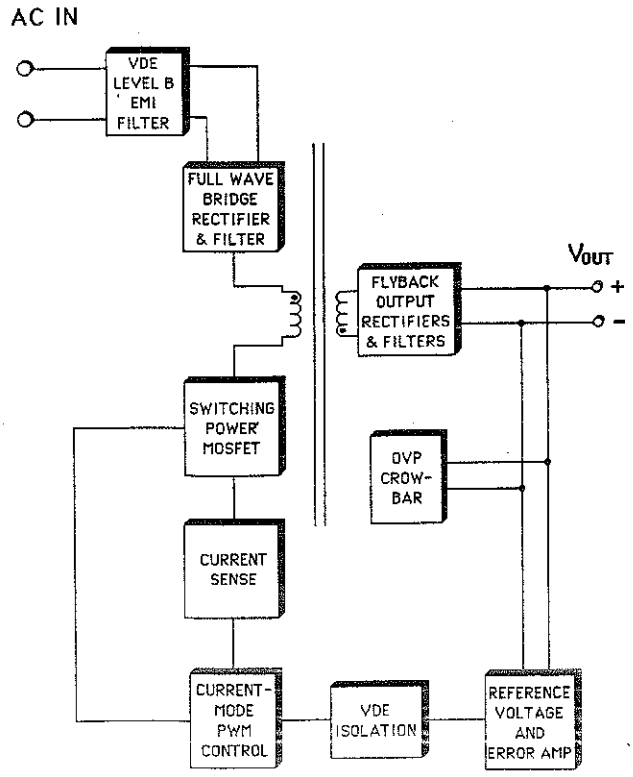
FLU1-40 is a series of single-output, 40-watt, open-frame switching power supplies. Approved to international safety agency standards, these supplies offer high-performance features such as a universal input voltage range of 85 VAC to 265 VAC (or 100-370 VDC) and an on-board EMI filter that complies to VDE/FCC Class B specifications.

Six models provide dc outputs of 5.0V, 9.0V, 12V, 15V, 24V or 28V. Standard features include 16-millisecond hold-up time, 5300 VDC input/output isolation and an on-board input line fuse. The series provides current limiting, soft start, indefinite short-circuit protection and over-voltage protection. Efficiency is typically greater than 70 percent; line/load regulation is 0.5 percent; the output is adjustable ±5 percent.

The FLU1-40 series is designed for ultra-high reliability. The minimum MTBF (calculated per the "parts stress" method outlined in MIL-HDBK 217E) is greater than 220,000 hours. Operation is specified over the 0°C to +70°C temperature range with cooling by natural convection.

All models are fabricated on a compact 3.0 x 5.0-inch printed circuit board with a maximum component height of 1.5 inches.

FUNCTIONAL BLOCK DIAGRAM



GENERAL SPECIFICATIONS

AC INPUT	Universal input voltage range 85-265 VAC single phase or 100-370 VDC.
INPUT LINE FREQUENCY	47-63 Hz.
INPUT LINE PROTECTION	MOV. Input line fuse provided on-board. (See Note 1.)
EMI FILTER	Standard. Exceeds requirements of VDE/FCC Class B by 10 dB, typical.
DC OUTPUT	See voltage/current rating chart.
CONTINUOUS OUTPUT POWER	40 watts, maximum.
OUTPUT VOLTAGE ADJUST	Adjustable ±5%.
EFFICIENCY	See voltage/current ratings chart.
HOLD-UP TIME	16 ms at 115 VAC, 40 ms at 220 VAC.
OVERLOAD PROTECTION	Power-limit circuit.
SHORT-CIRCUIT PROTECTION	Indefinite.
OVER-VOLTAGE PROTECTION	Standard on all models.
SOFT START	Standard on all models. Prevents output overshoot and power transformer saturation at turn-on.
DESIGN TOPOLOGY	Flyback converter, current-mode control.
FREQUENCY OF OPERATION	40 kHz (fixed).
HI-POT ISOLATION	5300 VDC, input-to-output for one minute. (See Note 2.)
NOISE, RIPPLE and SPIKES	1% peak-to-peak, maximum. (See Note 3.)
TRANSIENT RESPONSE	4 ms recovery to within 1% of regulation band with 5% maximum deviation.

ENVIRONMENTAL OPERATING CHARACTERISTICS

TEMPERATURE RANGE	0°C to +70°C
OUTPUT POWER DERATING	Derate output power and current linearly 2%/°C from +50°C to +70°C.
TEMPERATURE COEFFICIENT	±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. When operating in a confined area, moving air is recommended.

STORAGE CHARACTERISTICS

TEMPERATURE RANGE	-40°C to +85°C.
RELATIVE HUMIDITY	0 to 95%, non-condensing.

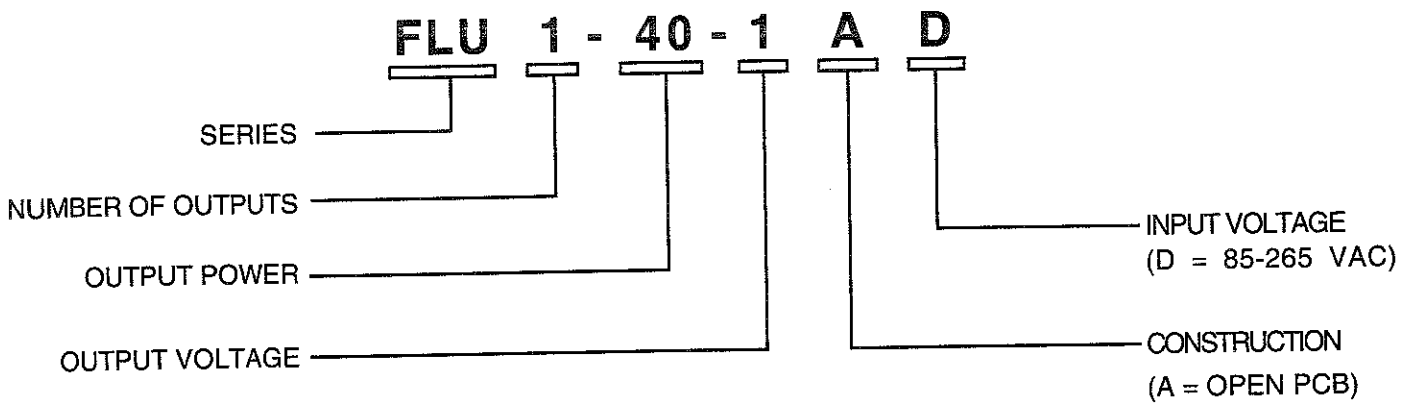
RELIABILITY

MEAN TIME BETWEEN FAILURES.....>220,000 hours. (See Note 4.)

Notes:

1. Replace input line fuse with the same type rating. Recommended: **2.0A/250 VAC slow-blow** fuse.
2. Hi-Pot isolation is 2200 VDC between input and ground for one minute.
3. Peak-to-peak and RMS metering equipment shall have a 20 MHz response with probes and cables maintaining a frequency response of 20 Hz to 20 MHz. Output ripple and spikes are measured directly at the output terminals of the power supply across a 0.1 µF ceramic capacitor without use of the probe ground.
4. Calculated per the "parts stress" method as outlined in MIL-HDBK 217E. Assumes ground benign and +25°C.

MODEL SELECTION GUIDE

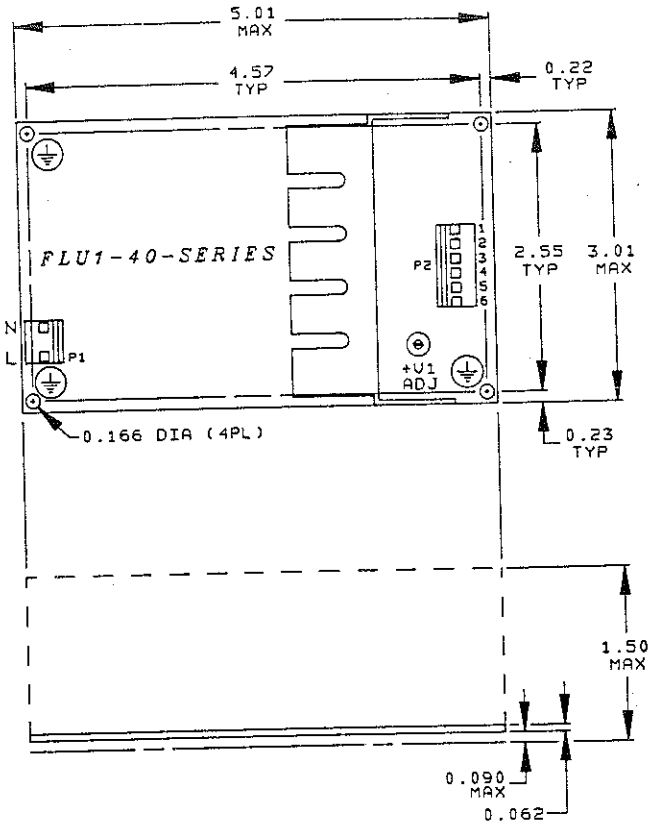


Model Number	Output Voltage (V)	Output Current Min. (A)	Output Current Max. (A)	Line Reg. (Note1)	Load Reg. (Note 2)	Efficiency (Note 3)	Output Tolerance (Note 4)
FLU1-40-1	5.0	0.0	8.0	0.1%	0.2%	62%	±1%
FLU1-40-2	9.0	0.0	4.4	0.1%	0.2%	68%	±1%
FLU1-40-3	12	0.0	3.3	0.1%	0.2%	72%	±1%
FLU1-40-4	15	0.0	2.7	0.1%	0.2%	72%	±1%
FLU1-40-5	24	0.0	1.7	0.1%	0.2%	75%	±1%
FLU1-40-6	28	0.0	1.4	0.1%	0.2%	75%	±1%

Notes:

1. Line regulation is measured under nominal load conditions with the input voltage varied from 85 VAC to 265 VAC.
2. Load regulation is tested by varying the load from 0% to 100% of rated load..
3. Efficiency is measured under full load at nominal input line.
4. Output tolerance is measured under maximum load conditions.
5. All measurements should be made directly at the terminals of the power supply.
6. The FLU1-40 series is approved to UL1950 (File E76127), CSA C22.2-220 (File No. LR52335), EN60950/IEC950 (TUV License R97678 and R9071501), and is Austel CCL-certified (Certificate A92/PS/004). VDE0805 approval is pending.

MECHANICAL OUTLINE AND PIN CONFIGURATION



Notes:
1. Dimensions shown are in inches.
2. Tolerances = 0.00 ±0.01
   0.000 ±0.005

PIN-OUT

Pin	FLU1-40-1	FLU1-40-2	FLU1-40-3	FLU1-40-4	FLU1-40-5	FLU1-40-6
1 2 3	5.0V/8.00A	9.0V/4.45A	12V/3.35A	15V/2.70A	24V/1.70A	28V/1.45A
4 5 6	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON

CONNECTORS

P1 Input Connector

MOLEX 09-74-1031

Pin	Function
1	AC Neutral
2	AC Return

MOLEX Mating Connector

Housing	09-50-1031
Crimp Terminal	08-70-1030

P2 Output Connector

MOLEX 09-74-1061

MOLEX Mating Connector

Housing	09-50-1061
Crimp Terminal	08-70-1030