

DIN-RAIL MOUNTABLE

The Family of FAW Models

SERIES FAW

Series FAW wide range input (85-264V a-c) accommodates mains power everywhere without a selector. UL recognized, CSA certified and approved by TÜV. Onboard VDE 0871, level B EMI filter. Power OK logic. Optional metal enclosure.

FEATURES

- Power OK LED: Green.
- Power OK logic: Open collector.
- a-c input 85-264V; d-c input 105-370V.
Note: Safety recognition for FAW applies to a-c operation only.
- Operating frequency: 120-130KHz.
- Soft-start circuit: Limits a-c turn-on surge.
- Adjustable voltage: Internal trimmer.
- Holding time: Output is sustained by internally stored energy for 20ms typical, 15ms minimum.
- Built-in EMI filter: Attenuates the conducted noise below the requirements of both FCC and VDE 0871 for Class B computing devices. Optional perforated metal covers attenuate radiated noise and provide protection.
- Safety: FAW are recognized by UL 1950, certified by CSA 1402C and approved by TÜV Rheinland to EN60950.
- Connections: Input and output screw terminal barrier strip.
- Remote error sensing: The 50, 100 and 150W FAW provide separate remote error sense terminals: 0.25V drop/wire.
- Optional Steel Enclosures:

Size	15W	25W	50W	100W	150W
Model	CA 24	CA 25	CA 26	CA 27	CA 28

FAW MODEL TABLE

MODEL	OUTPUT VOLTS	ADJUSTMENT RANGE	OVP (1) SETTING (VOLTS)	OUTPUT CURRENT (AMPS) 0-50°C	CURRENT LIMIT (AMPS)	SWITCHING RIPPLE mV		NOISE (spike) mV max
						typ	max	
15 WATT MODELS								
FAW 5-3K	5	4.5-5.5	6.0-6.9	0-3.0	3.3-5.5 ⁽²⁾	15	30	<120
FAW 12-1.3K	12	10.8-13.2	13.7-15.7	0-1.3	1.4-2.5 ⁽²⁾	10	30	<190
FAW 15-1K	15	13.5-16.5	17.0-19.0	0-1.0	1.1-2.0 ⁽²⁾	10	30	<220
FAW 24-0.7K	24	21.6-26.4	27.0-30.5	0-0.7	0.8-1.4 ⁽²⁾	20	50	<310
25 WATT MODELS								
FAW 5-5K	5	4.5-5.5	6.0-6.9	0-5.0	5.5-7.5 ⁽²⁾	31	62	<120
FAW 12-2.1K	12	10.8-13.2	13.7-15.7	0-2.1	2.3-3.3 ⁽²⁾	32	65	<190
FAW 15-1.7K	15	13.5-16.5	17.0-19.0	0-1.7	1.9-2.8 ⁽²⁾	42	85	<220
FAW 24-1.1K	24	21.6-26.4	27.0-30.5	0-1.1	1.2-1.8 ⁽²⁾	57	115	<310
50 WATT MODELS								
FAW 5-10K	5	4.5-5.5	6.0-6.9	0-10.0	10.5-12.0 ⁽³⁾	30	60	<120
FAW 12-4.2K	12	10.8-13.2	13.7-15.7	0-4.2	4.4-5.1 ⁽³⁾	35	70	<190
FAW 15-3.4K	15	13.5-16.5	17.0-19.0	0-3.4	3.6-4.1 ⁽³⁾	45	90	<220
FAW 24-2.1K	24	21.6-26.4	27.0-30.5	0-2.1	2.2-2.6 ⁽³⁾	50	100	<310
FAW 48-1K	48	43.2-52.8	53.5-60.0	0-1.0	1.1-1.3 ⁽³⁾	60	150	<350
100 WATT MODELS								
FAW 5-20K	5	4.5-5.5	6.0-6.9	0-20	21.0-24.0 ⁽³⁾	30	60	<120
FAW 12-8.3K	12	10.8-13.2	13.7-15.7	0-8.3	8.7-10.0 ⁽³⁾	35	70	<190
FAW 15-6.6K	15	13.5-16.5	17.0-19.0	0-6.6	7.0-8.0 ⁽³⁾	45	90	<220
FAW 24-4.2K	24	21.6-26.5	27.0-30.5	0-4.2	4.4-5.2 ⁽³⁾	50	100	<310
FAW 28-3.5K	28	25.2-30.8	32.0-35.0	0-3.5	3.7-4.2 ⁽³⁾	60	120	<330
FAW 48-2K	48	43.2-52.8	53.5-60.0	0-2	2.1-2.4 ⁽³⁾	80	160	<530
150 WATT MODELS								
FAW 5-30K	5	4.5-5.5	6.0-6.9	0-30	32.0-36.0 ⁽³⁾	30	60	<120
FAW 12-12K	12	10.8-13.2	13.7-15.7	0-12	13.0-15.0 ⁽³⁾	35	70	<190
FAW 15-10K	15	13.5-16.5	17.0-19.0	0-10	11.0-13.0 ⁽³⁾	45	90	<220
FAW 24-6K	24	21.6-26.4	27.0-30.5	0-6	6.3-7.0 ⁽³⁾	50	100	<310
FAW 28-5K	28	25.2-30.8	32.0-35.0	0-5	5.3-6.1 ⁽³⁾	60	120	<330
FAW 48-2.8K	48	43.2-52.8	53.5-60.0	0-2.8	3.0-3.5 ⁽³⁾	80	160	<530

(1) When the overvoltage protector trips off, a reset requires the mains power be interrupted for 120 seconds.

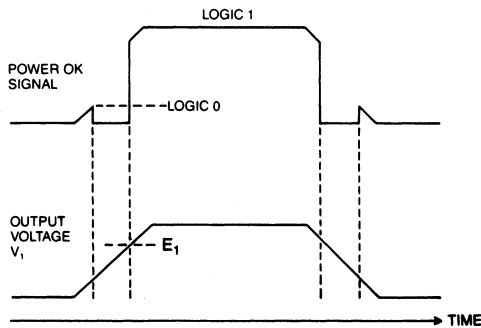
(2) Foldback type characteristic. (3) Square type or Rectangular type characteristic.



CE FAW are CE marked per the Low Voltage Directive (LVD), EN60950.

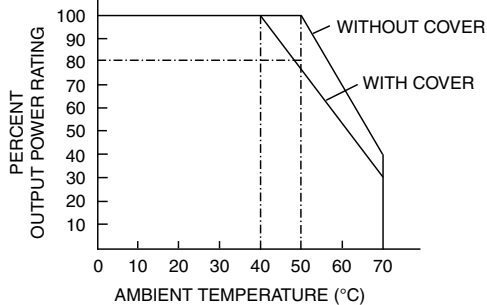


FIGURE 1
Power OK Signal Related to Output



Model	E ₁ (min)	Logic 1	
		(min)	(max)
5V	4.5V	2.5V	<Output Voltage
12V	9.5V	5V	
15V	12V	6V	
24V	19V	9V	
28V	22V	11V	
48V	40V	11V	

FIGURE 2
Output Power vs. Ambient Temperature



When the optional cover is added to FAW, power needs to be derated 20% at 50°C to maintain internal temperatures at a safe level. With the cover installed and derating 25% for each 10°C, full power can be obtained up to 42°C. Beyond 42°C derate as shown to a maximum of 71°C.

FAW can be individually installed as open frame or optionally enclosed power modules. They may also be combined into a custom power assembly for multi-output requirements. Please see pages 131-135 for details on Kepco's Power Assembly Program.



FAW INPUT CHARACTERISTICS

SPECIFICATION	RATING					CONDITION	
	All Models						
a-c Voltage	nom	100-240V a-c					Single phase
	range	85-264V a-c					
d-c Voltage	range	105-370V d-c (3)					Polarity insensitive
Brown-out Voltage	min	80V a-c/97V d-c (3)					Ripple, source and load effect increase
Frequency	nom	50-60Hz					Single phase
	range	47-440Hz (1)					
EMI		FCC and VDE 0871					Conducted Class B
Soft-start Circuit		Thermistor limiter					
Leakage Current	max	0.5mA UL method					120V a-c 50-60Hz
	max	0.75mA VDE method					240V a-c 50-60Hz
Start-up Time	max	500msec (2)					From turn-on until d-c output reaches nominal
Hold-up Time	typ	20msec					120V a-c
	min	15msec					100V a-c
Power OK		Green LED plus logic					(See figure 1)
INPUT CURRENT							
a-c Current (Amperes)		15W	25W	50W	100W	150W	120V a-c rms
	typ	0.3	0.55	1.0	2.0	3.0	
	max	0.4	0.70	1.2	2.4	3.5	240V a-c rms
	typ	0.2	0.35	0.5	1.0	1.5	
max	0.3	0.45	0.7	1.4	1.7		
Fuse Value (Amperes)		2.0	2.5	3.0	5.0	6.3	250V type 5x20mm
Initial Turn-on Surge, First Half Cycle (Amperes)		22	43	45	45	45	120V a-c rms
		34	85	90	90	90	240V a-c rms
Efficiency	typ %	70	70	76	76	76	Max load, nominal output
Circuit type A = Flyback B = Forward converter		A	A	B	B	B	
Switching Frequency	typ	120KHz					Nominal load

(1) At 440Hz the leakage current exceeds the UL safety specification.

(2) 900msec for 100W and 150W models.

(3) Safety approval is valid for a-c operation only.

FAW OUTPUT CHARACTERISTICS

SPECIFICATION		RATING	CONDITION
Source Effect	typ	1.0%	85-132 or 170-264V a-c
	max	2.0%	
Load Effect	typ	1.0%	10% to 100% load
	max	2.0%	
Temperature Effect	typ	1.0%	Nominal input, rated load
	max	2.0%	
Combined Effect	typ	2.0% ⁽¹⁾	Source, load & temperature
	max	4.0%	
Time Effect (drift)	typ	0.1%	0.5-8.5 hr, max load 25°C
	max	0.5%	
Recovery Characteristic	excursion	<4%	Step load 50-100%, rise time >50µs
	recovery	2ms	To within 1%

(1) FAW 15W and 25W: 2.6%.

FAW GENERAL SPECIFICATIONS

SPECIFICATION	RATING/DESCRIPTION	CONDITION
Temperature	0-71°C (see Fig. 2)	Operating
	-40°C to +85°C	Storage
Humidity	95% RH	Non-condensing, operating & storage
Shock	20g, 3 axes (11msec ±5msec pulse duration)	Non-operating, 3 shocks each axis
Vibration	5-10Hz: 10mm amplitude 3 axes	Non-operating, 1 hour each axis
	10-55Hz: 2g, 3 axes	
Isolation Output to case	500V d-c, 100MΩ	25°C, 65% RH
Enclosure	Optional metal	
Type of Construction	PC card, L-chassis	
Cooling	Convection	
Withstand Voltage	Input to output	25°C, 65% RH, Y cap removed
	Input to case	
Withstand Voltage	Input to output	
	Input to case	
Safety	UL 1950, CSA 1402C, EN60950	

OPEN FRAME DIMENSIONS (HxWxD)

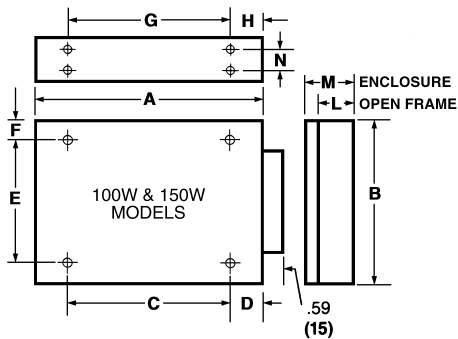
15W	inches — 0.98 x 3.74 x 3.94 mm — 25 x 95 x 100
25W	inches — 0.98 x 3.74 x 4.92 mm — 25 x 95 x 125
50W	inches — 0.98 x 3.74 x 6.50 mm — 25 x 95 x 165
100W	inches — 1.38 x 3.74 x 7.87 mm — 35 x 95 x 200
150W	inches — 2.01 x 3.74 x 7.87 mm — 51 x 95 x 200

CASED DIMENSIONS (HxWxD)

15W case (CA 24)	inches — 1.18 x 3.74 x 3.94 mm — 30 x 95 x 100
25W case (CA 25)	inches — 1.18 x 3.74 x 4.92 mm — 30 x 95 x 125
50W case (CA 26)	inches — 1.22 x 3.74 x 6.50 mm — 31 x 95 x 165
100W case (CA 27)	inches — 1.57 x 3.74 x 7.87 mm — 40 x 95 x 200
150W case (CA 28)	inches — 2.17 x 3.74 x 7.87 mm — 55 x 95 x 200

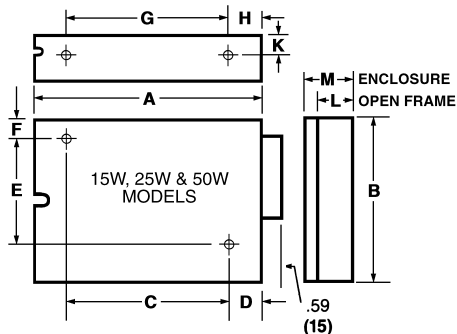
OUTLINE DIMENSIONAL DRAWINGS

Fractional dimensions in light face type are in inches, **dimensions in bold face type are in millimeters.**



Tolerances:
0.04" (1.0mm)
unless otherwise noted

Mounting:
4-40 tapped holes —
(2) side;
maximum screw
penetration
0.2 (5mm)



WEIGHT (Packed for shipment)

15W	9.52oz, 270gm
25W	10.68oz, 300gm
50W	15.90oz, 400gm
100W	2.2lbs, 1.0Kg
150W	2.6lbs, 1.2Kg

MODEL	A	B	C	D	E	F	G	H	K	L ⁽¹⁾	M ⁽²⁾	N
15 WATTS	3.94 100	3.74 95	3.35 85	0.30 7.5	2.76 70	0.32 8	3.35 85	0.30 7.5	0.49 12.5	0.98 25	1.18 30	—
25 WATTS	4.92 125	3.74 95	4.33 110	0.30 7.5	2.76 70	0.32 8	4.33 110	0.30 7.5	0.49 12.5	0.98 25	1.18 30	—
50 WATTS	6.50 165	3.74 95	5.71 145	0.51 13	2.95 75	0.59 15	5.51 140	0.59 15	0.49 12.5	0.98 25	1.22 31	—
100 WATTS	7.87 200	3.74 95	6.69 170	0.67 17	2.95 75	0.31 8	6.69 170	0.59 15	—	1.38 35	1.57 40	0.79 20
150 WATTS	7.87 200	3.74 95	6.69 170	0.67 17	2.95 75	0.31 8	6.69 170	0.59 15	—	2.01 51	2.17 55	1.18 30

(1) Open frame. (2) With cover (optional).