

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

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

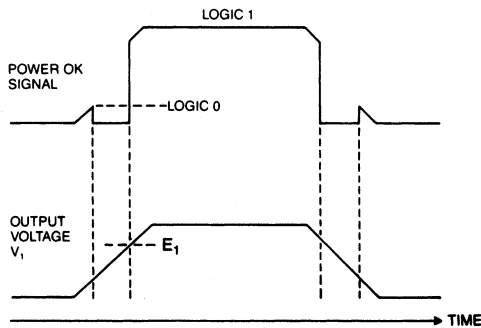
(2) Foldback type characteristic. (3) Square type or Rectangular type characteristic.



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

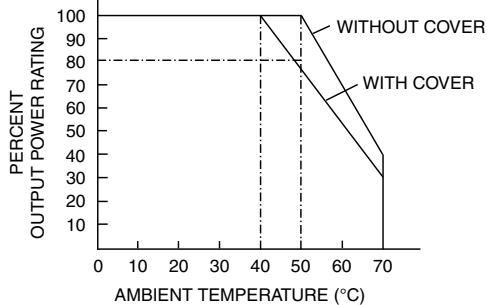


**FIGURE 1**  
Power OK Signal Related to Output



Model	E <sub>1</sub> (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)
<b>INPUT CURRENT</b>							
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% <sup>(1)</sup>	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
Enclosure		Optional metal
Type of Construction		PC card, L-chassis
Cooling		Convection
Withstand Voltage	Input to output	3.75KV a-c for 1 minute
	Input to case	2KV a-c for 1 minute
Withstand Voltage	Input to output	3KV a-c for 1 minute
	Input to case	2KV a-c for 1 minute
Safety		UL 1950, CSA 1402C, EN60950

## OPEN FRAME DIMENSIONS (HxWxD)

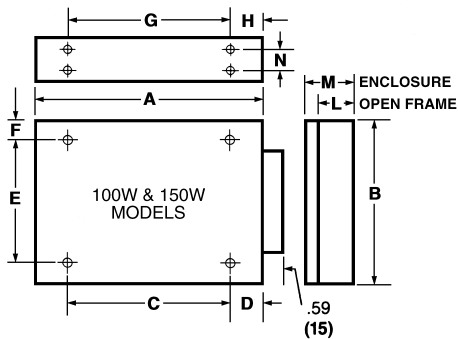
<b>15W</b>	inches — 0.98 x 3.74 x 3.94 mm — 25 x 95 x 100
<b>25W</b>	inches — 0.98 x 3.74 x 4.92 mm — 25 x 95 x 125
<b>50W</b>	inches — 0.98 x 3.74 x 6.50 mm — 25 x 95 x 165
<b>100W</b>	inches — 1.38 x 3.74 x 7.87 mm — 35 x 95 x 200
<b>150W</b>	inches — 2.01 x 3.74 x 7.87 mm — 51 x 95 x 200

## CASED DIMENSIONS (HxWxD)

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

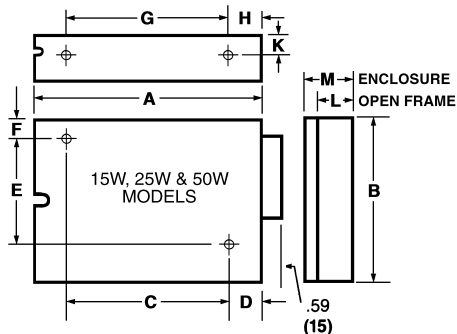
## OUTLINE DIMENSIONAL DRAWINGS

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)

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

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

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