

**SERIES:** PSK-50E | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

**FEATURES**

- universal input range (85 ~ 264 Vac)
- Class B emissions (EN 55032/CISPR)
- certified to IEC/EN/UL 62368-1
- designed to meet IEC/EN 60335
- short circuit, over voltage protection
- <0.15 W no-load power consumption
- Class I or Class II
- up to 5,000 m operating altitude
- OVC III

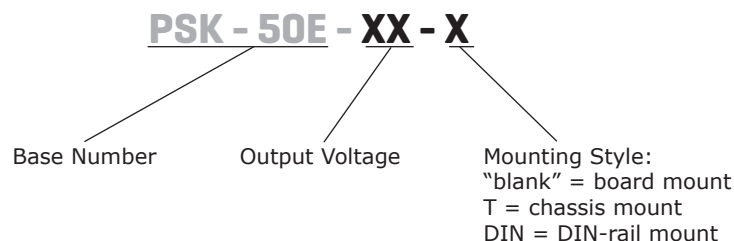


| MODEL      | output<br>voltage<br>typ<br>(Vdc) | output<br>current<br>max<br>(A) | output<br>power<br>max<br>(W) | ripple<br>and noise <sup>1</sup><br>max<br>(mVp-p) | efficiency <sup>2</sup><br>typ<br>(%) |
|------------|-----------------------------------|---------------------------------|-------------------------------|----------------------------------------------------|---------------------------------------|
| PSK-50E-5  | 5                                 | 8.0                             | 40                            | 150                                                | 85                                    |
| PSK-50E-12 | 12                                | 4.17                            | 50                            | 120                                                | 87                                    |
| PSK-50E-15 | 15                                | 3.33                            | 50                            | 150                                                | 88                                    |
| PSK-50E-24 | 24                                | 2.08                            | 50                            | 240                                                | 89                                    |
| PSK-50E-36 | 36                                | 1.39                            | 50                            | 360                                                | 89                                    |
| PSK-50E-48 | 48                                | 1.04                            | 50                            | 480                                                | 89                                    |

Notes: 1. At full load, nominal input, 20 MHz bandwidth oscilloscope with 0.1µF ceramic capacitor and 10 µF electrolytic capacitor.

2. At 230 Vac input.

3. All specifications are measured at Ta=25°C, humidity <75%, nominal input voltage, and rated output load unless otherwise specified.

**PART NUMBER KEY**


## INPUT

| parameter                 | conditions/description     | min | typ     | max  | units |
|---------------------------|----------------------------|-----|---------|------|-------|
| voltage <sup>4</sup>      | ac input (safety approved) | 85  | 100~240 | 264  | Vac   |
|                           | dc input                   | 120 |         | 370  | Vdc   |
| frequency                 |                            | 47  | 50~60   | 63   | Hz    |
| current                   | at 100 Vac, full load      |     |         | 1.2  | A     |
| inrush current            | at 240 Vac, full load      |     | 110     |      | A     |
| leakage current           | touch                      |     |         | 0.25 | mA    |
| no load power consumption |                            |     |         | 0.15 | W     |

Notes: 4. See the derating curve for more details.

## OUTPUT

| parameter                | conditions/description  | min   | typ | max   | units |
|--------------------------|-------------------------|-------|-----|-------|-------|
| capacitive load          | 5 Vdc output model      |       |     | 8,000 | μF    |
|                          | 12 Vdc output model     |       |     | 4,200 | μF    |
|                          | 15 Vdc output model     |       |     | 3,400 | μF    |
|                          | 24 Vdc output model     |       |     | 2,087 | μF    |
|                          | 36 Vdc output model     |       |     | 1,440 | μF    |
|                          | 48 Vdc output model     |       |     | 600   | μF    |
| output voltage set point | 5 Vdc output model      | 4.90  |     | 5.10  | Vdc   |
|                          | 12 Vdc output model     | 11.76 |     | 12.24 | Vdc   |
|                          | 15 Vdc output model     | 14.85 |     | 15.15 | Vdc   |
|                          | 24 Vdc output model     | 23.76 |     | 24.24 | Vdc   |
|                          | 36 Vdc output model     | 35.64 |     | 36.36 | Vdc   |
|                          | 48 Vdc output model     | 47.52 |     | 48.48 | Vdc   |
| voltage accuracy         | 5, 12 Vdc output model  |       | ±2  |       | %     |
|                          | all other output models |       | ±1  |       | %     |
| line regulation          | high line to low line   |       |     | ±0.5  | %     |
| load regulation          | 10 % to 100 % load      |       |     | ±1.0  | %     |
| hold-up time             | at 115 Vac              | 8     |     |       | ms    |
| switching frequency      |                         |       | 65  |       | kHz   |

## PROTECTIONS

| parameter               | conditions/description | min | typ | max  | units |
|-------------------------|------------------------|-----|-----|------|-------|
| over voltage protection | auto recovery, hiccup  |     |     |      |       |
|                         | 5 Vdc output model     |     |     | 6.3  | Vdc   |
|                         | 12 Vdc output model    |     |     | 15.6 | Vdc   |
|                         | 15 Vdc output model    |     |     | 18.0 | Vdc   |
|                         | 24 Vdc output model    |     |     | 29.1 | Vdc   |
|                         | 36 Vdc output model    |     |     | 43.3 | Vdc   |
| over current protection | auto recovery, hiccup  | 110 |     | 140  | %     |
|                         | auto recovery, hiccup  |     |     |      |       |

## SAFETY & COMPLIANCE

| parameter           | conditions/description                                                                      | min | typ | max   | units |
|---------------------|---------------------------------------------------------------------------------------------|-----|-----|-------|-------|
| isolation voltage   | input to output, for 1 minunte                                                              |     |     | 6,000 | Vdc   |
| safety approvals    | certified to 62368-1: IEC, EN, UL<br>designed to meet 60335: IEC, EN                        |     |     |       |       |
| safety class        | Class I or Class II                                                                         |     |     |       |       |
| EMC                 | EN 55032:2015+A11:2020 Class B,<br>EN IEC 61000-3-2:2019+A1:2021, EN 61000-3-3:2013+A2:2021 |     |     |       |       |
| EMC immunity        | EN 55035: 2017+A11:2020                                                                     |     |     |       |       |
| conducted emissions | EN 55032                                                                                    |     |     |       |       |
| radiated emissions  | EN 55032                                                                                    |     |     |       |       |

## SAFETY & COMPLIANCE

| parameter            | conditions/description                                                                         | min       | typ | max | units |
|----------------------|------------------------------------------------------------------------------------------------|-----------|-----|-----|-------|
| ESD                  | IEC 61000-4-2:2008, Air Discharge: $\pm 8$ kV, Contact Discharge: $\pm 4$ kV, perf. Criteria A |           |     |     |       |
| radiated immunity    | IEC 61000-4-3:2020, perf. Criteria A                                                           |           |     |     |       |
| EFT/burst            | IEC 61000-4-4:2012, $\pm 0.5$ kV, $\pm 1$ kV, perf. Criteria A                                 |           |     |     |       |
| surge                | IEC 61000-4-5:2014, L-N: $\pm 2$ kV, L-E (Ground): $\pm 4$ kV, perf. Criteria A                |           |     |     |       |
| conducted immunity   | IEC 61000-4-6:2013, perf. Criteria A                                                           |           |     |     |       |
| PFMF                 | IEC 61000-4-8:2009, perf. Criteria A                                                           |           |     |     |       |
| voltage dips         | IEC 61000-4-11:2004, Dip: 30% Reduction, Dip > 95% Reduction, perf. Criteria A                 |           |     |     |       |
| voltage interruption | IEC 61000-4-11:2004, > 95% Reduction, perf. Criteria B                                         |           |     |     |       |
| MTBF                 | MIL-HDBK-217F at 25°C                                                                          | 1,200,000 |     |     | hours |
| RoHS                 | yes                                                                                            |           |     |     |       |

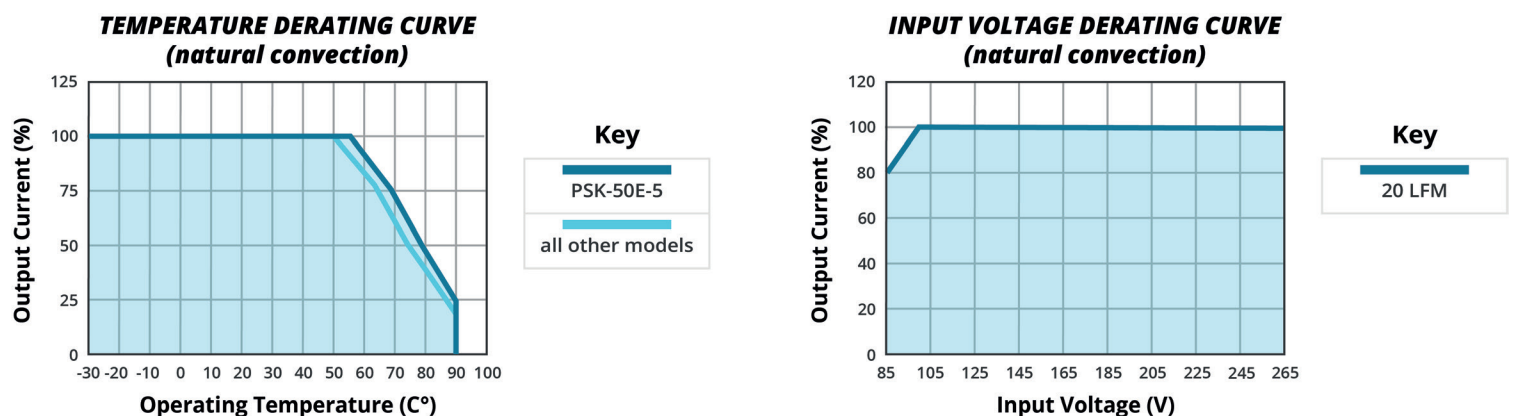
## ENVIRONMENTAL

| parameter             | conditions/description                                                                       | min | typ | max                     | units       |
|-----------------------|----------------------------------------------------------------------------------------------|-----|-----|-------------------------|-------------|
| operating temperature | see derating curves<br>(safety approved at maximum 50°C or refer to report)                  | -30 |     | 80                      | °C          |
| storage temperature   |                                                                                              | -30 |     | 85                      | °C          |
| storage humidity      |                                                                                              | 0   |     | 93                      | %           |
| altitude              | IEC/EN/UL 62368-1 OVC II<br>IEC/EN 62368-1 OVC III<br>designed to meet IEC/EN 60335-1 OVC II |     |     | 5,000<br>2,000<br>3,000 | m<br>m<br>m |

## MECHANICAL

| parameter  | conditions/description                                                                                                                                                                           | min | typ               | max | units                |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------|-----|----------------------|
| dimensions | board mount: 2.170 x 3.140 x 1.201 [55.20 x 79.80 x 30.50 mm]<br>chassis mount: 2.170 x 4.200 x 1.201 [55.20 x 106.60 x 30.50 mm]<br>DIN-rail: 2.170 x 4.200 x 1.784 [55.20 x 106.60 x 45.31 mm] |     |                   |     | inch<br>inch<br>inch |
| weight     | board mount<br>chassis mount<br>DIN-rail                                                                                                                                                         |     | 222<br>233<br>330 |     | g<br>g<br>g          |

## DERATING CURVES



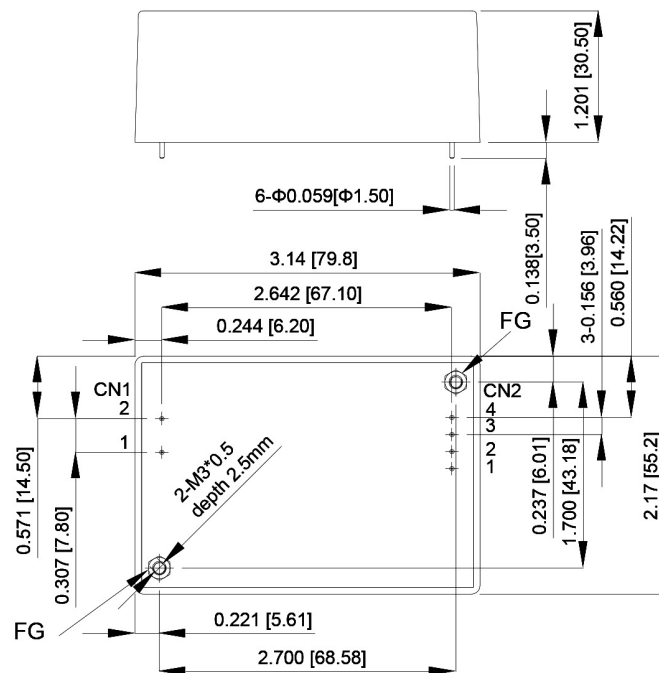
## MECHANICAL DRAWING

### Board mount

units: inch [mm]

tolerance: inches: x.xx =  $\pm 0.03$ , x.xxx =  $\pm 0.02$ mm: x.x -  $\pm 0.7$ , x.xx =  $\pm 0.5$ 

| PIN CONNECTIONS |          |       |
|-----------------|----------|-------|
| PIN             | Function | Wafer |
| 1               | AC(L)    | CN1   |
| 2               | AC(N)    |       |
| 1               | +Vout    | CN2   |
| 2               | +Vout    |       |
| 3               | -Vout    |       |
| 4               | -Vout    |       |



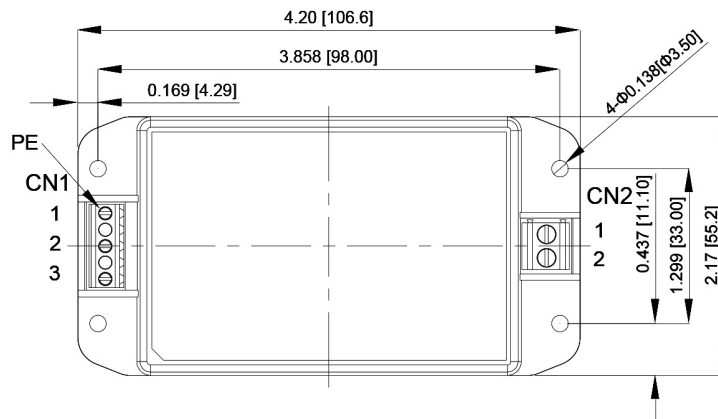
### Chassis mount

units: inch [mm]

tolerance: inches: x.xx =  $\pm 0.03$ , x.xxx =  $\pm 0.02$ mm: x.x -  $\pm 0.7$ , x.xx =  $\pm 0.5$ 

| AC Input Connector (CN1): DINKLE EK350V-03P5 or equivalent |          |                   |
|------------------------------------------------------------|----------|-------------------|
| PIN                                                        | Function | Mating Wire Range |
| 1                                                          | PE       | 16 ~ 30 AWG       |
| 2                                                          | AC(L)    |                   |
| 3                                                          | AC(N)    |                   |

| DC Output Connector (CN2): DINKLE EK500V-02P or equivalent |          |                   |
|------------------------------------------------------------|----------|-------------------|
| PIN                                                        | Function | Mating Wire Range |
| 1                                                          | +Vout    | 12 ~ 16 AWG       |
| 2                                                          | -Vout    |                   |



## MECHANICAL DRAWING (CONTINUED)

### DIN-rail mount

units: inch [mm]

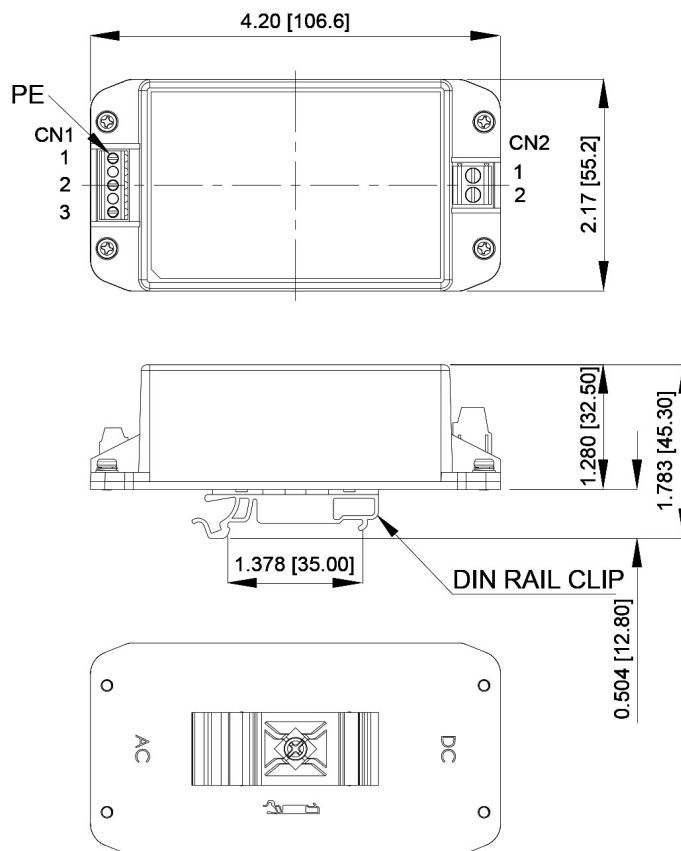
tolerance: inches: x.xx =  $\pm 0.03$ , x.xxx =  $\pm 0.02$ mm: x.x -  $\pm 0.7$ , x.xx =  $\pm 0.5$ 

AC Input Connector (CN1): DINKLE EK350V-03P5 or equivalent

| PIN | Function | Mating Wire Range |
|-----|----------|-------------------|
| 1   | PE       | 16 ~ 30 AWG       |
| 2   | AC(L)    |                   |
| 3   | AC(N)    |                   |

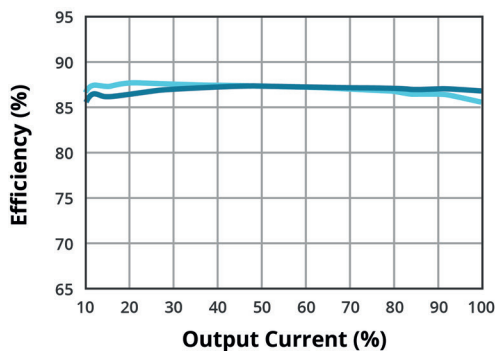
DC Output Connector (CN2): DINKLE EK500V-02P or equivalent

| PIN | Function | Mating Wire Range |
|-----|----------|-------------------|
| 1   | +Vout    | 12 ~ 16 AWG       |
| 2   | -Vout    |                   |



## EFFICIENCY CURVES

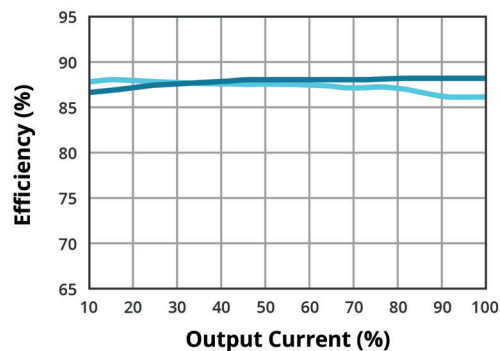
**EFFICIENCY VS OUTPUT LOAD  
(PSK-50E-5)**

**Key**

115 V

230 V

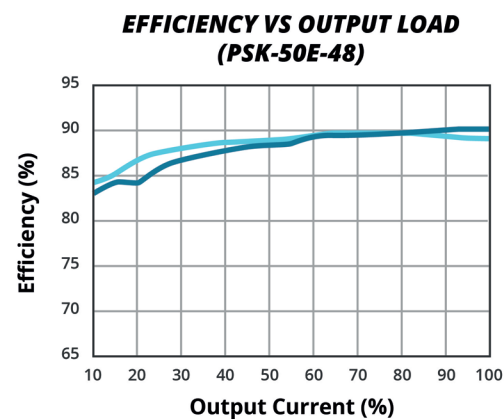
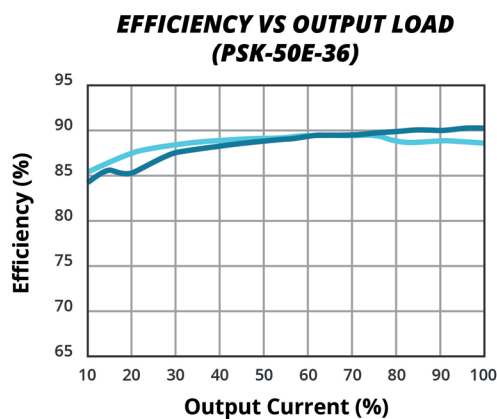
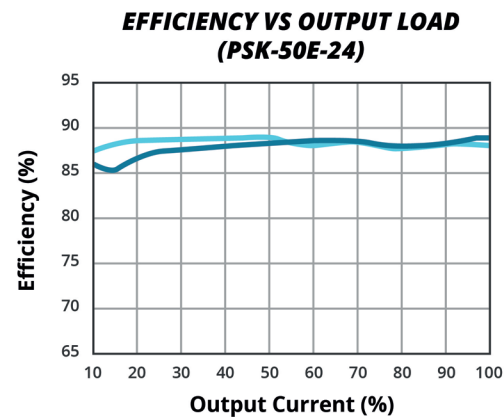
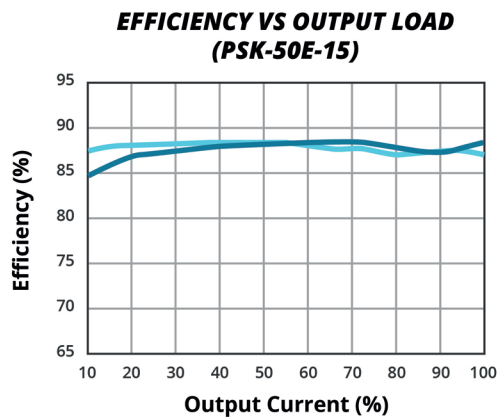
**EFFICIENCY VS OUTPUT LOAD  
(PSK-50E-12)**

**Key**

115 V

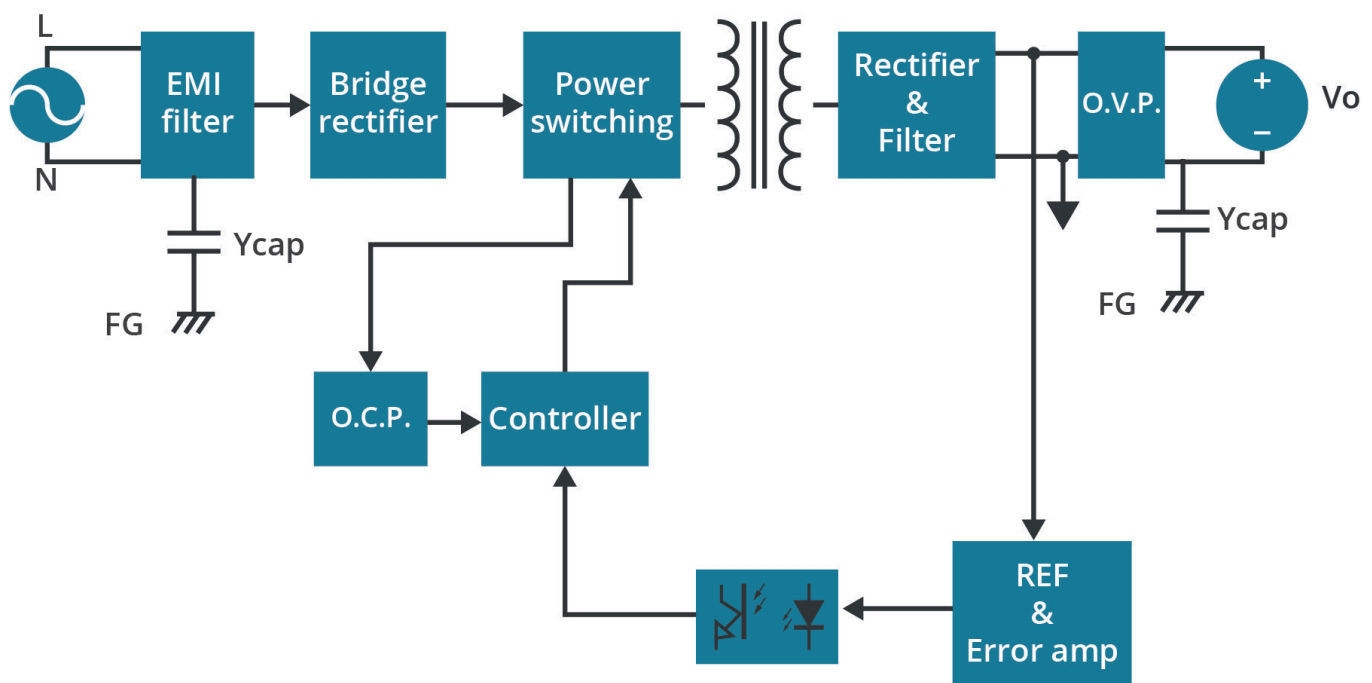
230 V

## EFFICIENCY CURVES (CONTINUED)



## ELECTRICAL BLOCK DIAGRAM

Figure 1



## REVISION HISTORY

| rev. | description     | date       |
|------|-----------------|------------|
| 1.0  | initial release | 12/17/2024 |

The revision history provided is for informational purposes only and is believed to be accurate.



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