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

## FEATURES

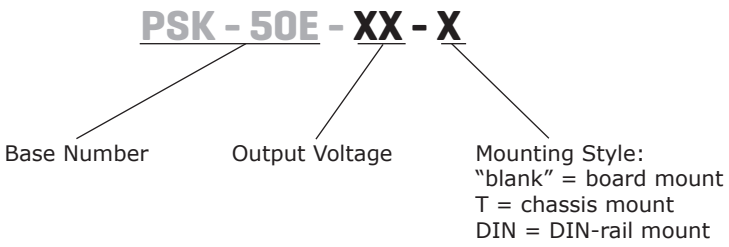
- universal input range (85 ~ 264 Vac)
- Class B emissions (EN 55032/CISPR)
- certified to IEC/EN/UL 62368-1
- designed to meet IEC/EN 60335
- short circuit, over voltage protection
- <0.15 W no-load power consumption
- Class I or Class II
- up to 5,000 m operating altitude
- OVC III

## MODEL

| MODEL | output voltage typ (Vdc) | output current max (A) | output power max (W) | ripple and noise[1] max (mVp-p) | efficiency[2] typ (%) |
|---|---|---|---|---|---|
| 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






Please read our datasheet & drawing disclaimer here.

## INPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| voltage[4] | ac input (safety approved)<br>dc input | 85<br>120 | 100~240 | 264<br>370 | Vac<br>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 |
| | 48 Vdc output model | | | 56.8 | Vdc |
| over current protection | auto recovery, hiccup | 110 | | 140 | % |
| short circuit protection | 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: ±8 kV, Contact Discharge: ±4 kV, perf. Criteria A | | | | |
| radiated immunity | IEC 61000-4-3:2020, perf. Criteria A | | | | |
| EFT/burst | IEC 61000-4-4:2012, ±0.5 kV, ±1 kV, perf. Criteria A | | | | |
| surge | IEC 61000-4-5:2014, L-N: ±2 kV, L-E (Ground): ±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 | | | | |

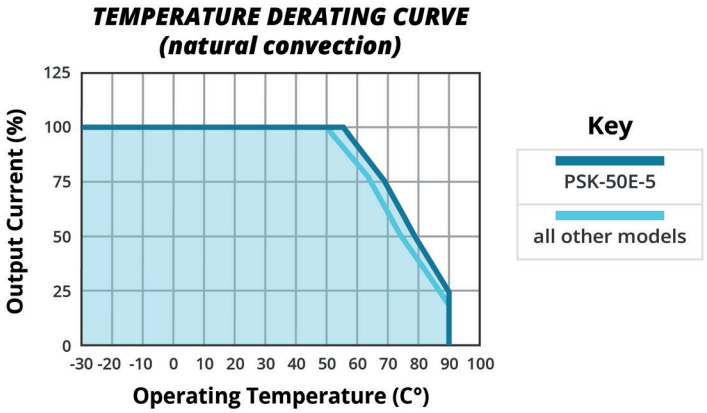
## ENVIRONMENTAL

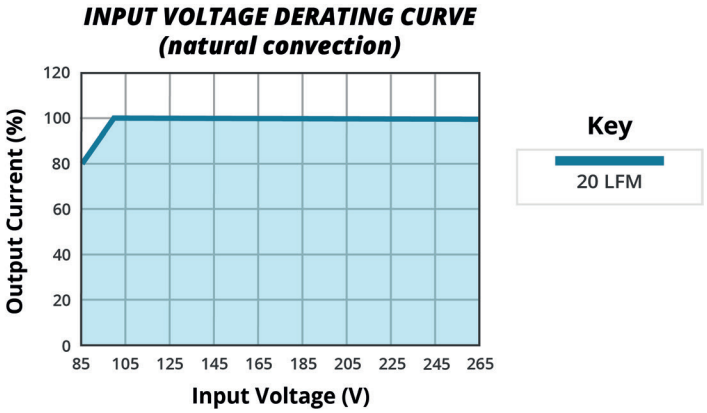
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| operating temperature | see derating curves<br>(safety approved at maximum 50°C or refer to report) | -30 | | 80 | °C |
| storage temperature | | -30 | | 85 | °C |
| storage humidity | | 0 | | 93 | % |
| altitude | 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

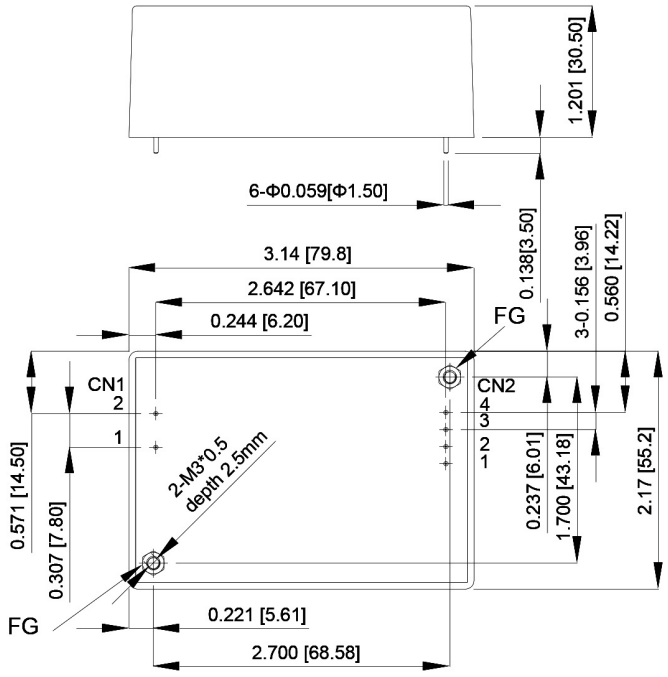


## MECHANICAL DRAWING

**Board mount**
units: inch [mm]
tolerance: inches: x.xx = ±0.03, x.xxx = ±0.02
mm: x.x - ±0.7, x.xx = ±0.5

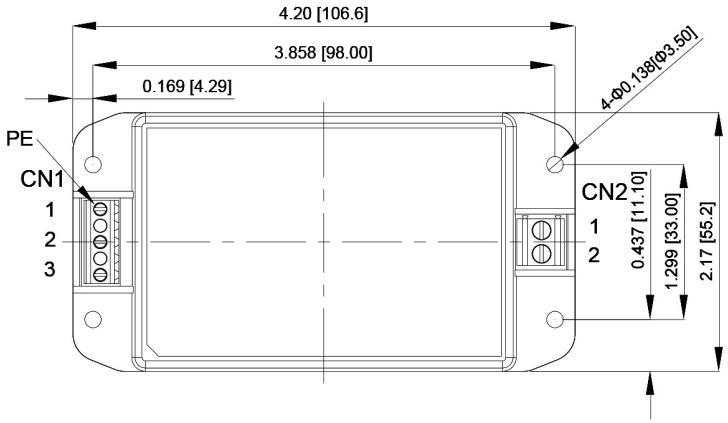
| PIN CONNECTIONS | | |
|---|---|---|
| PIN | Function | Wafer |
| 1 | AC(L) | CN1 |
| 2 | AC(N) | |
| 1 | +Vout | CN2 |
| 2 | +Vout | |
| 3 | -Vout | |
| 4 | -Vout | |




**Chassis mount**
units: inch [mm]
tolerance: inches: x.xx = ±0.03, x.xxx = ±0.02
mm: x.x - ±0.7, x.xx = ±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 | |

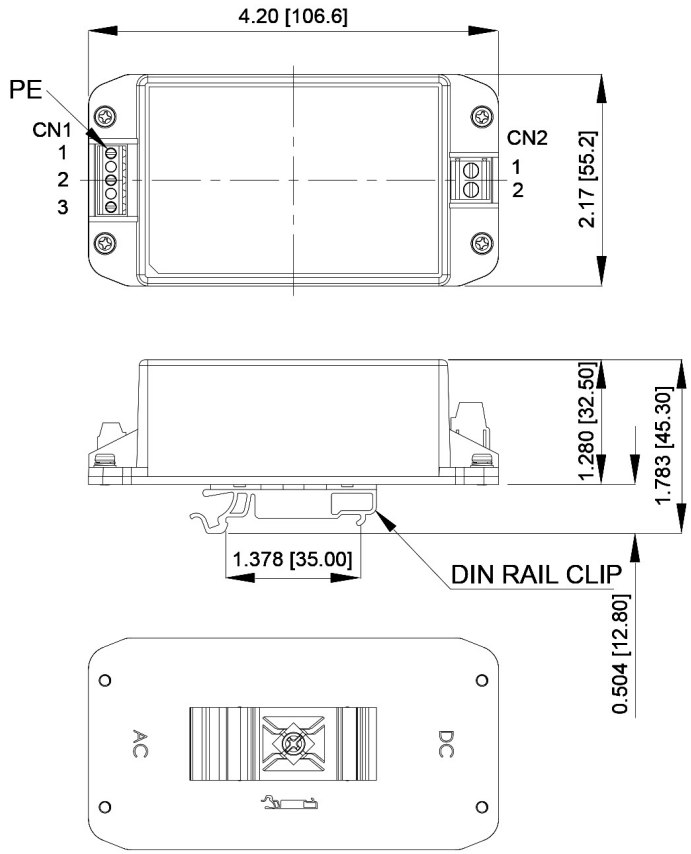


## MECHANICAL DRAWING (CONTINUED)

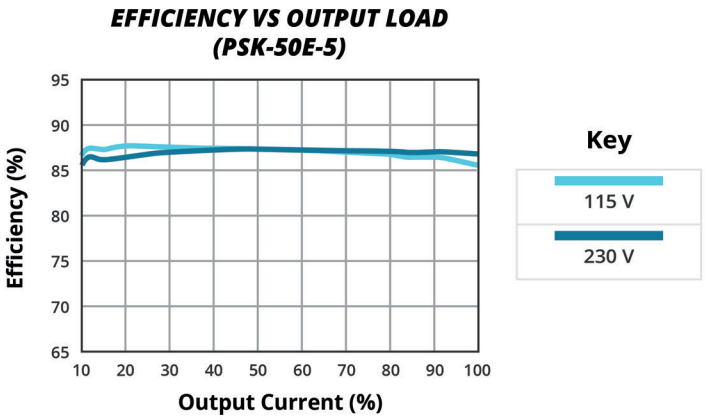
**DIN-rail mount**
units: inch [mm]
tolerance: inches: x.xx = ±0.03, x.xxx = ±0.02
mm: x.x - ±0.7, x.xx = ±0.5

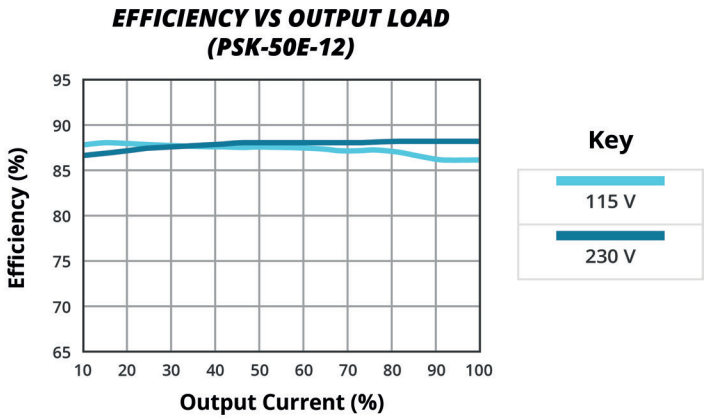
| AC Input Connector (CN1): DINKLE EK350V-03P5 or equivalent | | |
|---|---|---|
| PIN | Function | Mating Wire Range |
| 1 | PE | 16 ~ 30 AWG |
| 2 | AC(L) | |
| 3 | AC(N) | |

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

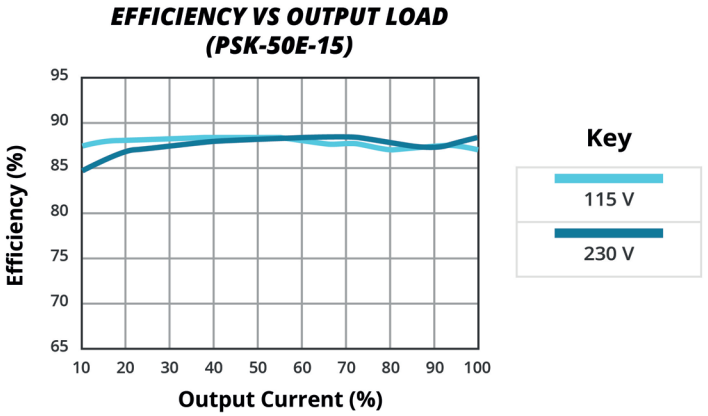


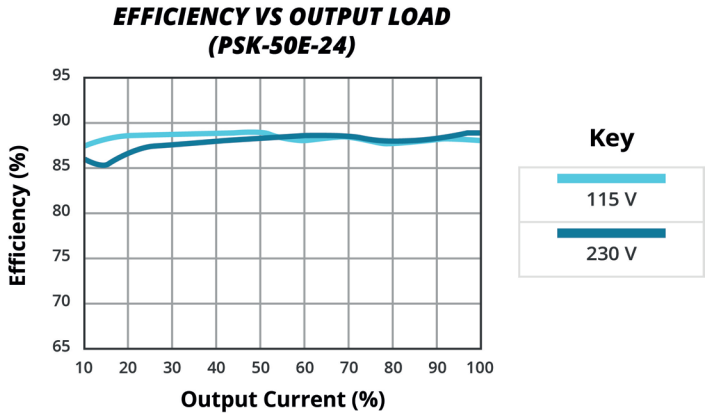

## EFFICIENCY CURVES

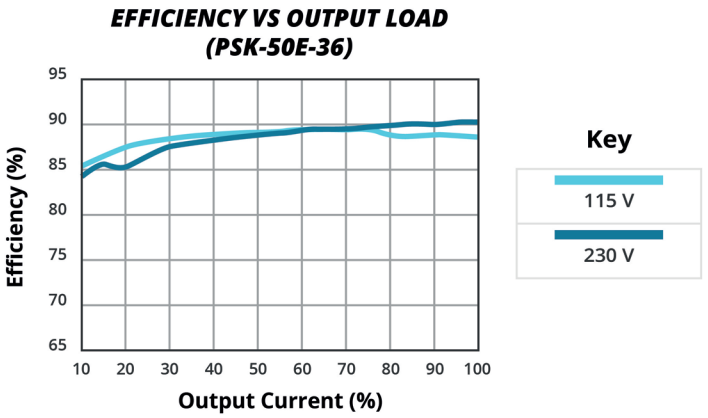


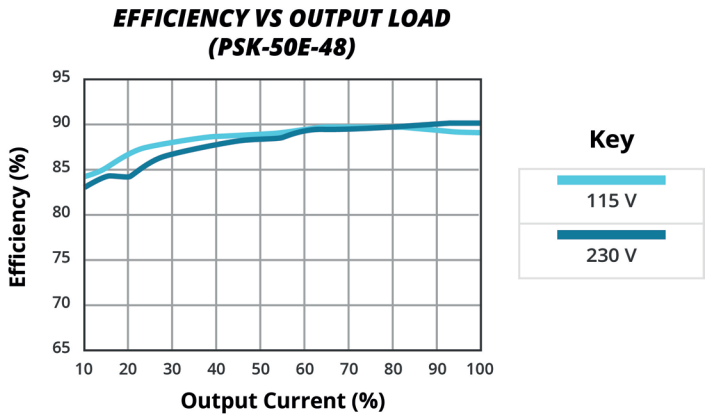



## EFFICIENCY CURVES (CONTINUED)



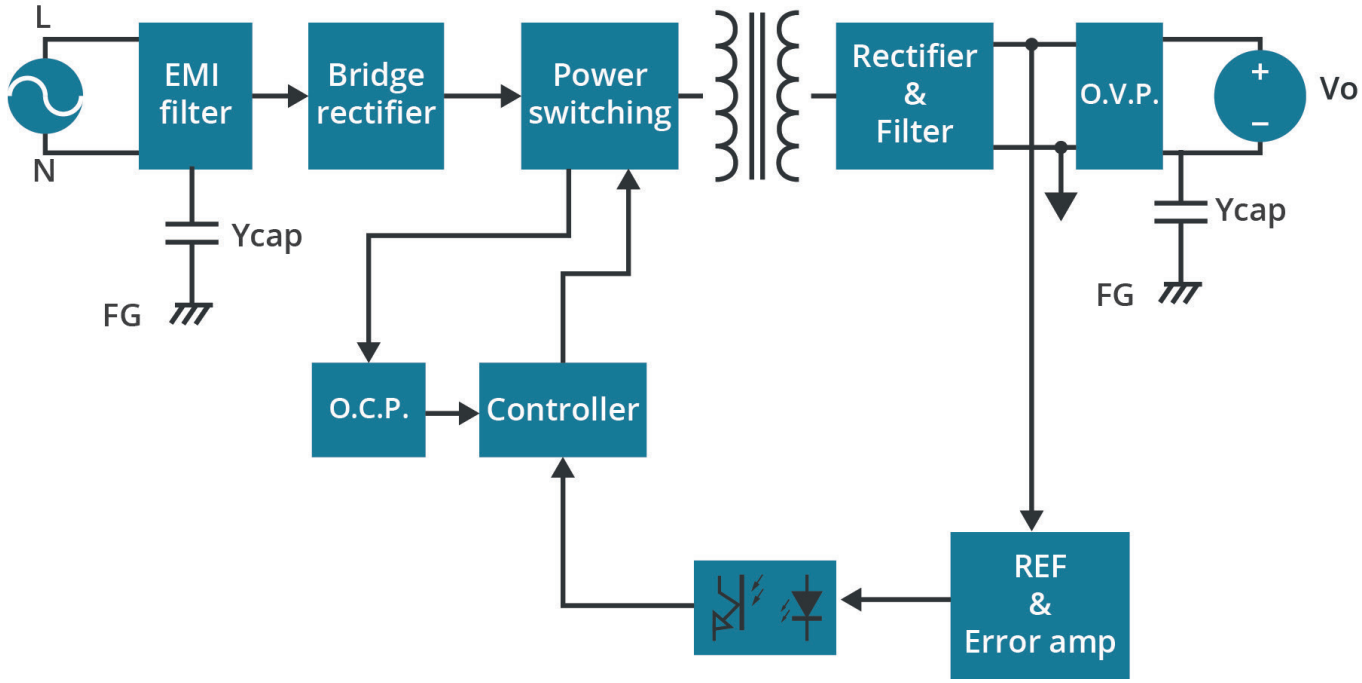




## ELECTRICAL BLOCK DIAGRAM

**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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