

E-SAFE® II Hybrid Power Switch

E-SAFE® II Provides Power Switching at High Amperage and High Ambient Temperatures

The E-SAFE® II hybrid power switch provides reliable and accurate power switching up to 35 amperes at 158°F (70°C). This mercury-free product is specifically designed to operate in the higher ambient temperatures of foodservice equipment applications.

Utilization of mercury relays is being eliminated due to many regulations affecting its use in the United States and around the world. The E-SAFE II is the best performing product at the most economical price. Because of the product's unique design, there is no need to purchase costly heat sinks used with traditional solid state relays (SSRs). In addition, since this is a three-phase device, there is no need to wire multiple command signals. With a switching life of millions of cycles and an ambient rating of 158°F (70°C), with no heat sink required, this product is superior to typical SSRs.

The E-SAFE II hybrid power switch provides foodservice equipment operators with longer contact life and higher performance than typical mechanical contactors used in equipment. By using Watlow's patent NO-ARC technology, the E-SAFE II can switch millions of cycles to increase the life of the product with reduced noise and increased temperature accuracy. E-SAFE II's inherent ability to operate at fast cycle times makes it an ideal complementary product for a time, proportional, integral derivative (PID) controller.

E-SAFE II is mercury free, RoHS compliant by design, CE approved and C-UL®/UL® recognized. The reliability of the product is protected by a two-year warranty.

Typical Applications

- Griddles
- Convection ovens
- Steamers
- Toaster ovens
- Fryers
- Conveyor ovens
- Holding cabinets
- Dishwashers/warewashers



Features and Benefits

Mercury free

- Improves safety by eliminating risk of toxic metals in proximity to food
- Adheres to federal and state regulations to phase out and ban mercury

High ambient temperature rating of 158°F (70°C)

- Specifically designed to operate in the higher ambient temperatures of foodservice equipment applications

NO-ARC hybrid power switch technology

- Combines the current carrying capacity of mechanical contacts with the longevity of solid state technology
- Allows faster cycling times than mechanical contactors
- Delivers more precise temperature control, saves energy, extends heater life and decreases total cost of ownership

Compact and touch-safe package

- Fits in shallow foodservice equipment cabinets
- Allows for horizontal or vertical mounting installations
- Increases safety for installer/operator
- Uses Ultem® enclosure material with an HB rating of 338°F (170°C) and a UL® flame retardant rating of 94 5VA

RoHS compliant by design

- Specifically designed to meet Asian and European requirements

LED indicator light

- Indicates command signal presence from controller
- Assists in trouble shooting

Agency approvals

- UL® recognition, C-UL® and CE
- W.E.E.E compliant

Specifications

Output voltage

- 200/240VAC +10/-15%, 50/60Hz, 100/120VAC +10/-15%, 50/60Hz

Output amperage

- Up to 35A single, dual and three-phase

Operating environment

- 32 to 158°F (0 to 70°C) operating temperature
- 0 to 90% RH (relative humidity), non-condensing
- Operational life: four million switching cycles
- Installation category III, pollution degree 2

Control mode

- NO-ARC hybrid contactor

Input command signal

- 3 to 32VDC, 24VAC +20/-20%, off state ≤ 2.7 VDC
- 100 to 240VAC +10/-15%, [85 to 264VAC]

Note: On the 100 to 240VAC input models, do not use a RC snubber on the E-SAFE II relay input or the temperature control command signal output

LED indicator light

- Built in LED assists in trouble shooting; LED "off" indicates relay(s) are open, LED "on" indicates relay(s) are closed.

Input command signal terminals

- 1/4 in. fast on appliance

Line and load terminals

- No. 10 screw will accept ring or spade, 1/4 in. (6.35 mm) x 10-32

Mounting

- Back panel mount, horizontal or vertical mounting options

Ordering Information

Part Number

① ② ③	④	⑤	⑥ ⑦	⑧	⑨	⑩ ⑪ ⑫
	Number of Poles	Load Voltage	Command Signal Voltage	Future Option	Future Option	Custom Options
ES2				0	0	

④ Number of Poles	
1 =	1 pole
2 =	2 poles controlled
3 =	3 poles controlled

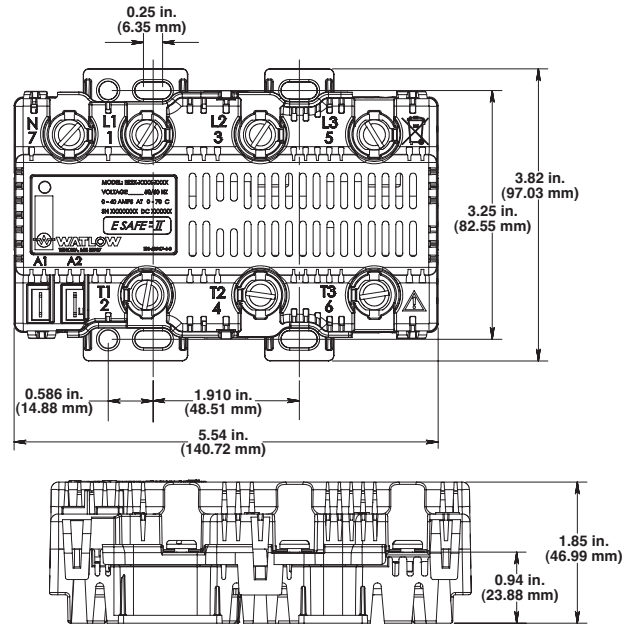
⑤ Load Voltage	
1 =	100 to 120VAC
2 =	200 to 240VAC
3 =	230/277VAC (400/480VAC with wye/star, neutral connected to center required)

⑥ ⑦ Command Signal Voltage	
LV =	Low voltage 3 to 24VDC or 24VAC
HV =	High voltage 100 to 240VAC +10/-15% (85 to 264VAC)

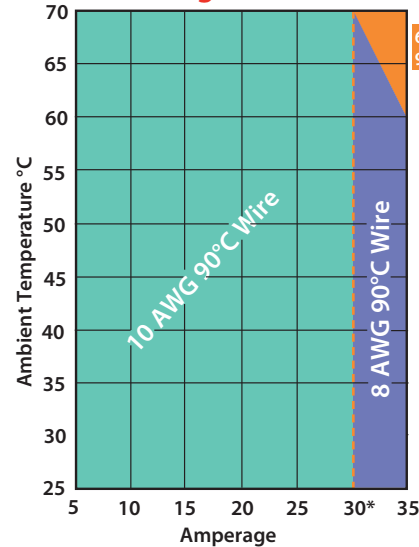
⑩ ⑪ ⑫ Command Signal Voltage	
000 =	Standard product
Any three letters or numbers = cosmetic options	

Powered by Possibility

Dimensional Drawings



Product Rating Curve



These ratings apply to 3-phase units with cycle times of 30 seconds or more. Consult the factory for 1- and 2-phase unit ratings.

UL® Conditions of Acceptability

Applications must be tested as described below for specific wire insulation or specific wire gauge sizes. Tests shall be performed in the end application under worst case operating conditions.

Test Procedure

A. Monitor temperatures of terminals, using thermocouples between the ring terminal and connectors L1, L2 or L3. The temperature must not exceed 203°F (95°C).

B. Monitor temperatures of wire insulation, using a thermocouple located three inches from the connector. The temperature must not exceed the insulation rating of the wire.

*30A is maximum rating when operating above 240VAC.

Warning: Thermocouples attached to terminals will be at load voltage potential, measurements need to be taken with isolated equipment or isolate the sensor from terminal with suitable insulation.

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