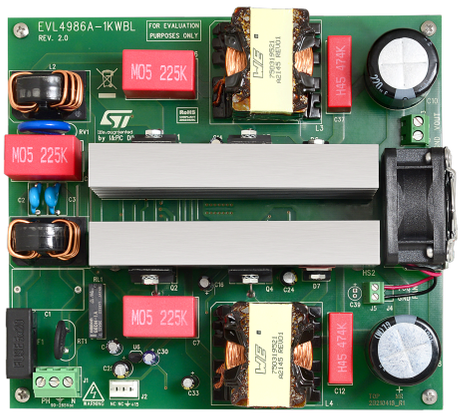
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EVL4986A-1KWBL

Data brief

1 kW bridgeless CCM-PFC pre-regulator based on L4986A



Features

- Input mains range: 90 to 265 Vac - frequency 45 to 65 Hz
- Output voltage / load: 400 V / 2.5 A
- Efficiency:
  - above 98% at 230 Vac (full load)
  - above 95.5% at 115 Vac (full load)
  - above 94% between 10% and 100% of full load
- No load mains consumption: below 250 mW at 230 Vac
- Mains harmonics in compliance with EN61000-3-2 Class-A and JEITA-MITI, Class-A
- EMI in accordance with EN55022 Class-B
- Safety in accordance with EN62368
- Dimensions 145 x 160 mm, height = 35 mm
- PCB: double sided, 70 µm, FR-4, mixed PTH/SMT

Description

The EVL4986A-1KWBL demonstration board is a bridgeless PFC pre-regulator, double boost topology, featuring 1 kW output power (400 Vdc) and wide input voltage range (90 Vac-265 Vac), based on the new L4986A peak current mode CCM power factor controller.

It is intended as a front-end converter up to 1 kW, able to be compliant with IEC61000-3-2 and JEITA-MITI.

The demo is designed on the double boost (Barbi) topology using two branches, each consisting of a boost stage, managing half mains cycle. Each section operates at almost fixed frequency (65 kHz).

Thanks to the bridgeless approach and the L4986A control IC, the board offers high efficiency and low input current THD across the entire input voltage range. This is achieved using a low complexity schematic and fewer components compared to similar bridgeless solutions.

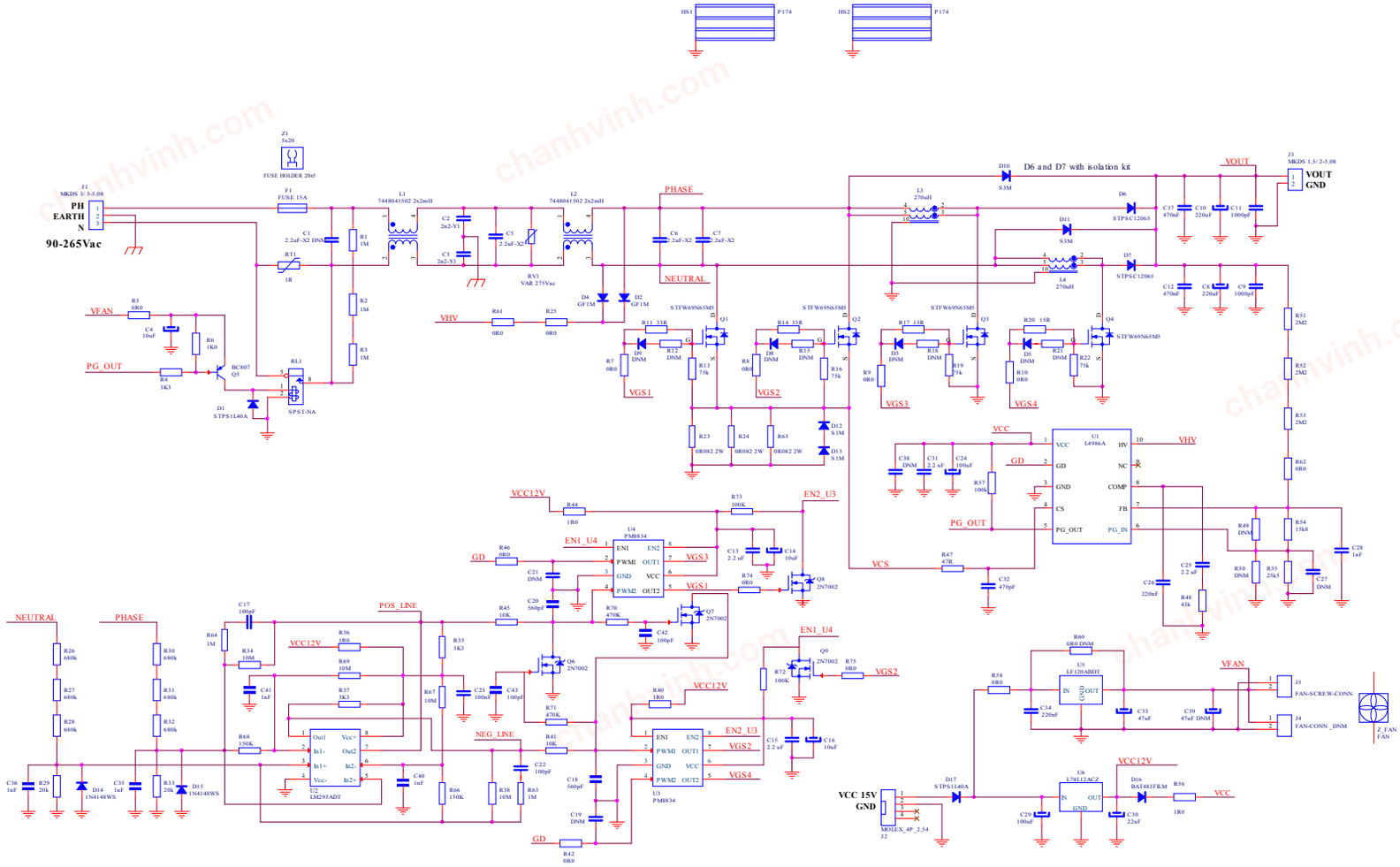
Product status link
EVL4986A-1KWBL

Product label
SUSTAINABLE TECHNOLOGY

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1 Schematic diagrams

Figure 1. EVL4986A-1KWBL demo board schematic



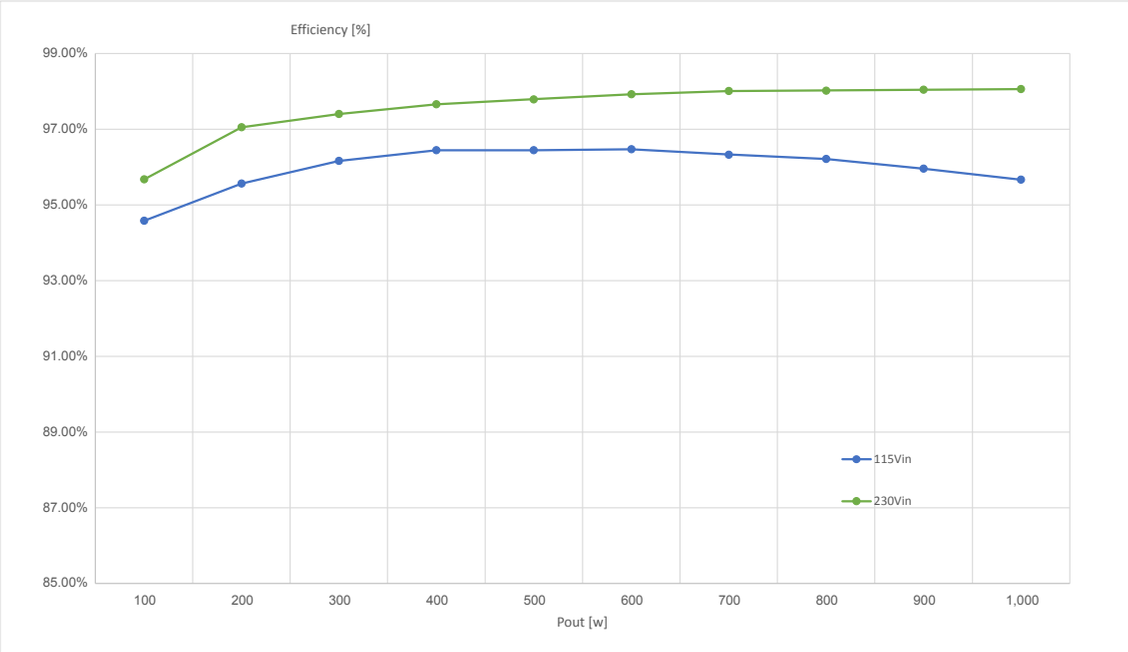
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2 Measurements

2.1 Efficiency

The following figure shows the overall efficiency of the EVL4986A-1KWBL demo board (load between 10% and 100%), measured at the nominal mains voltages (115 Vac and 230 Vac), after a warm-up time of about 1h.

Figure 2. EVL4986A-1KWBL efficiency



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2.2 THD and PF

The total harmonic distortion (THD) and the power factor (PF) have been measured against the mains voltage, from full load 100% to 10%. The results are summarized in the following figures. Note that THD is always below 10%.

Figure 3. EVL4986A-1KWBL THD

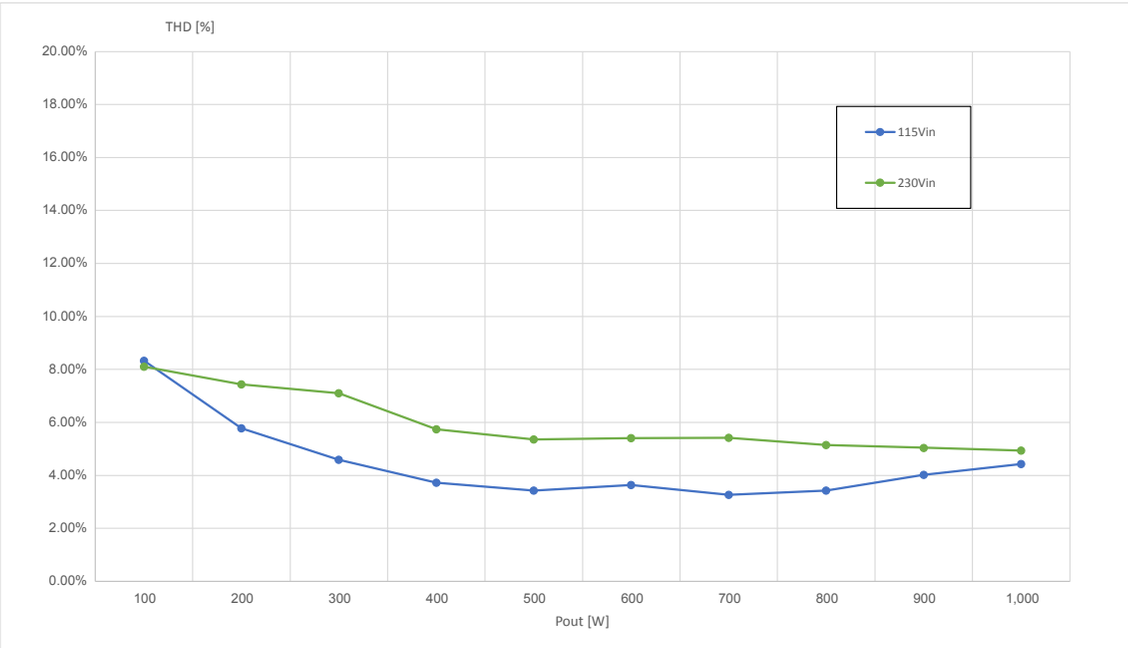
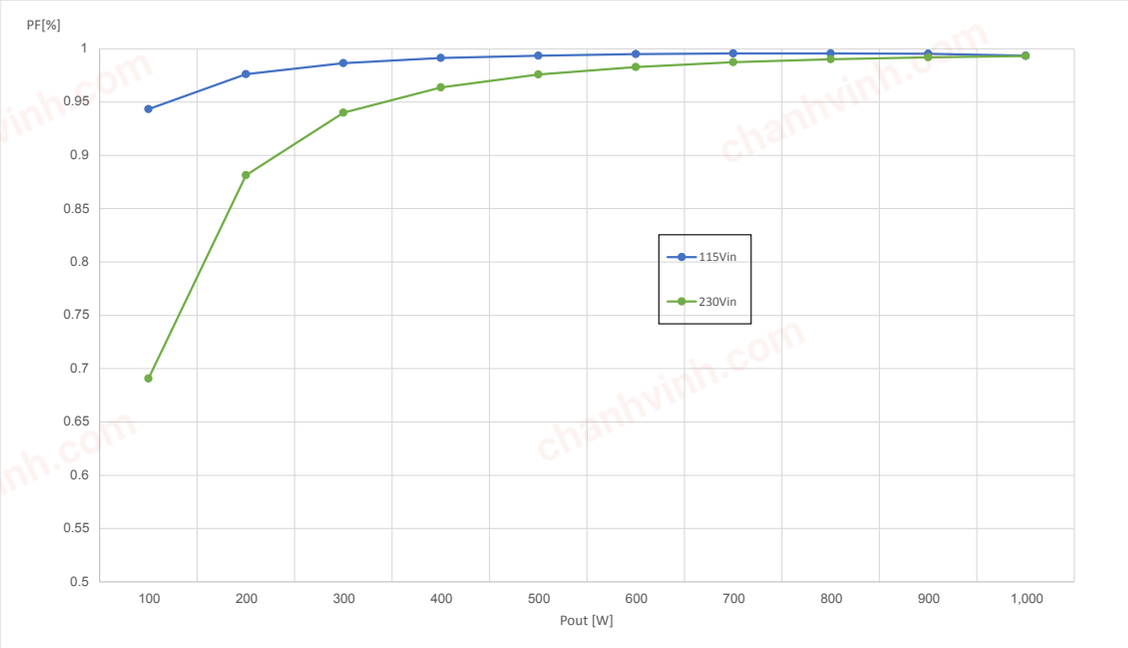


Figure 4. EVL4986A-1KWBL PF



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Revision history

Table 1. **Document revision history**

Date	Version	Changes
07-Mar-2022	1	Initial release.

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