

3300 W CCM boost PFC based on M5 MOSFET and L4985A



The picture shown is for illustration purpose only.
Actual product may vary depending on buyer's selection and availability.

Features

- Universal input voltage range: 90 to 265 Vac, 45 to 65 Hz
- Regulated output voltage: 415 Vdc
- Rated output power: up to 3300 W
- Total harmonic distortion (THD): <6% at full load and <10% down to 20% load
- Switching frequency: 65 kHz
- Efficiency peak: 97.8%
- Harmonics and compliance as per IEC61000 norms

Description

The **STEVAL-3KW3PFCCB** board is the practical implementation of a 3.3 kW PFC boost module which is the major front end building block for any mains fed power conversion system.

It may be an EV charger, telecom power supplies, air-conditioners, or general high-power SMPS applications.

It has a compact form-factor: 125 x 180 x 60 mm³ and is intended to deliver full power under forced convection cooling at the EU voltage range.

It may be run in the universal range as well but, the output power must be derated accordingly to limit the current drawn from the mains and temperature rise of the heatsink.

The electrical specifications have been derived keeping in mind standard applications.

This board allows the engineer to evaluate a wide range of power output options.

Anything from sub 1000 till about 3300 W may be evaluated using this board by replacing the power MOSFETs with suitable types and optimizing the gate drive resistors.

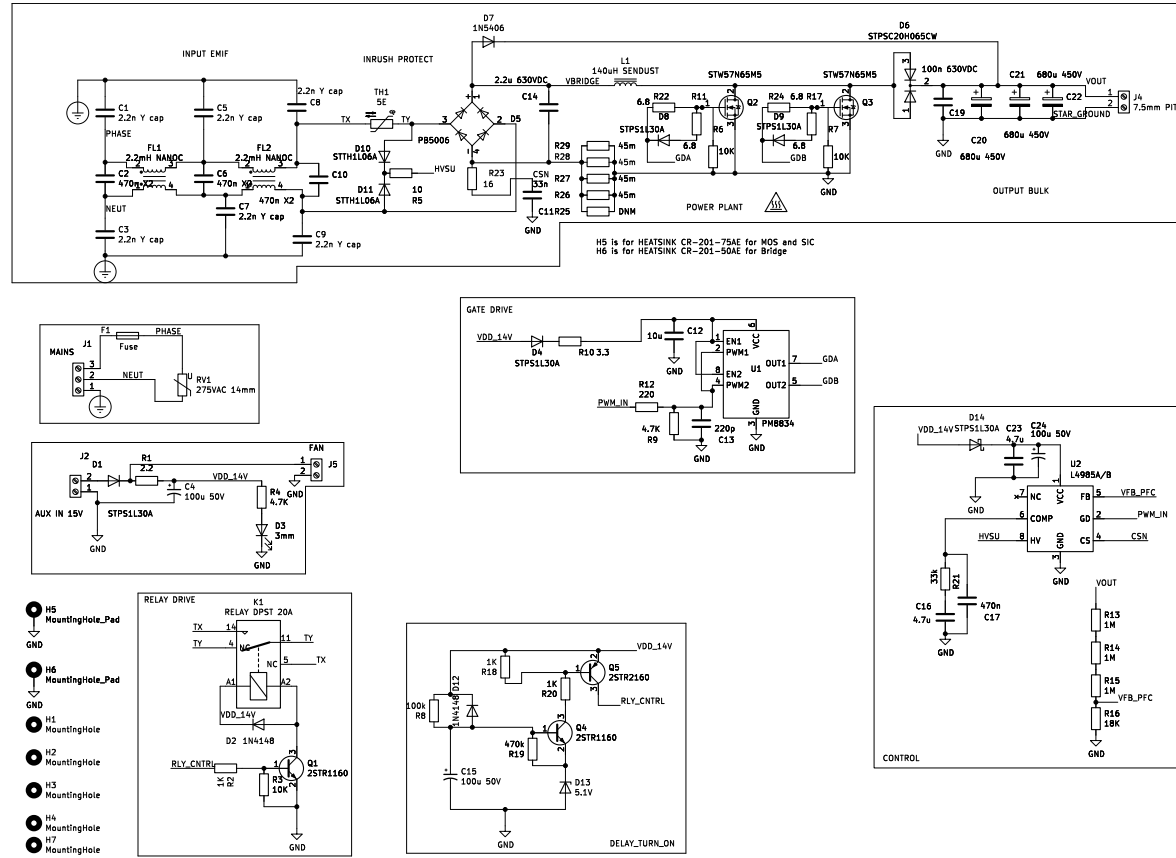
STW57N65M5 and **STW69N65M5** have both been tested to be very suitable for targeting the 3000 to 3300 W power levels with no other changes required in this board and consistent performance figures.

Product summary	
3300 W CCM boost PFC based on M5 MOSFET and L4985A	STEVAL-3KW3PFCCB
Continuous conduction mode (CCM) PFC controller with high voltage startup	L4985A
N-channel 650 V, 56 mOhm typ., 42 A MDmesh M5 Power MOSFET in a TO-247 package	STW57N65M5
Applications	Residential climate control and HVAC Air conditioner (window/wall/portable)

1 Schematic diagrams

Notice: These schematics are for illustration purpose only. Actual product may vary depending on buyer's selection and availability.

Figure 1. STEVAL-3KW3PFCCB circuit schematic





2 Custom evaluation boards information

Notice: These evaluation boards are custom designed and built, in small quantities, according to specific requests from customers and are destined for evaluation and testing of ST products in a research and development setting. Please contact ST to provide your specific requests and get your custom built board(s).

Revision history

Table 1. Document revision history

Date	Revision	Changes
05-Dec-2024	1	Initial release.

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