STDES-BLUEPLUG2

Data brief

Smart plug reference design based on BLUENRG-M2SP

Fully assembled board developed for performance evaluation only, not available for sale

Product summary	
Smart plug reference design based on BlueNRG-M2SP	STDES-BLUEPLUG2
VIPerPlus family: Energy saving high voltage converter for direct feedback	VIPER06XS
Very low power application processor module for Bluetooth® low energy v5.2	BLUENRG-M2SP
ASSP for metering applications with up to four independent 24-bit 2nd order sigma-delta ADCs	STPM32
Applications	Wireless Connectivity Smart Home

Features

- Smart Energy Meter design with wireless connectivity
- BLE (Bluetooth Low Energy) v5.2 connectivity to:
  - control (turning ON/OFF)
  - display metering parameters
- NFC interface: to configure the design and store the logs
- Dimming of light for TRIAC dimmable load rated below 12 A
- Rated voltage: 240/120 V_{AC} (typ.)
- Rated current: 12 A (typ.)
- Power consumption of plug: 0.7 W (max.)
- Instantaneous and averaged power
- RMS and instantaneous voltage and current
- BLUENRG-M2SP module radio certifications:
  - FCC certification: S9NBNRGM2SP
  - IC certification: 8976C-BNRGM2SP

Description

The STDES-BLUEPLUG2 is a reference design for home-automation and Internet of Things (IoT) applications.

The on-board BLUENRG-M2SP is compliant with Bluetooth Low Energy (BLE) specification 5.2 to allow secure communication of metering data from specific electrical loads to a smart phone with BLE support.

It supports multiple roles simultaneously and can act at the same time as Bluetooth smart master and slave device.

The device current consumption on AC mains is 3 to 7 mA.

The device acts as BLE peripheral device which can be connected to any smart device using the Android ST BLE PLUG app (available for free download on Google Play) to control and monitor the load and its energy parameters.

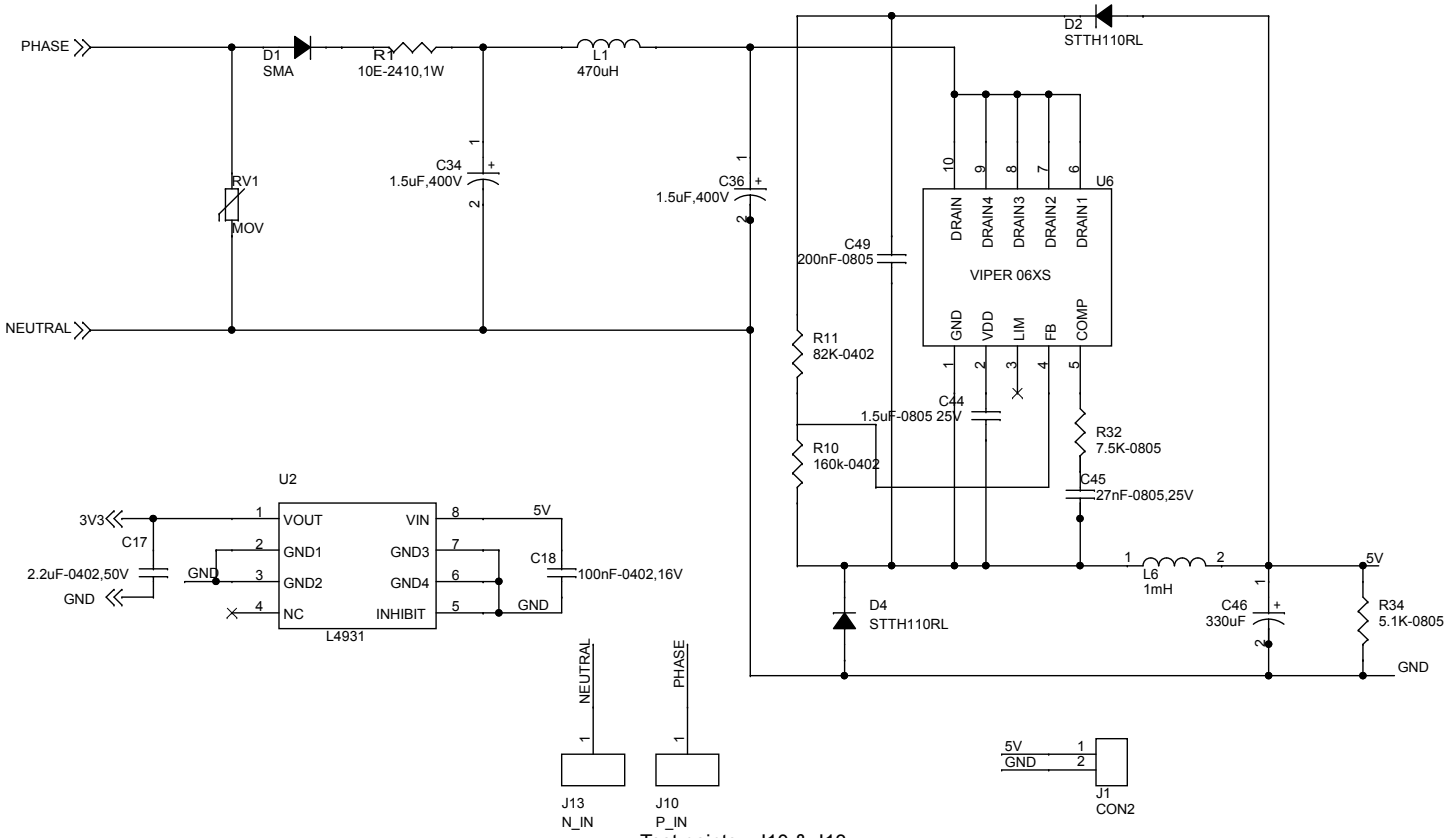
The app features load ON/OFF turning, scheduling, dimming and metering parameters.

The STDES-BLUEPLUG2 embeds an STPM32 metering chip for high accuracy measurement of power and energy in power line systems using shunt current sensors, a three-terminal TRIAC which controls the current through AC switching for various electrical system applications, and a non-isolated buck converter supply based on the VIPER06XS. This type of supply is ideal for the applications (like ST BLE PLUG) where a large amount of current is not needed and a small form factor is required.

The STDES-BLUEPLUG2 is a fully assembled board developed for performance evaluation only, not available for sale.

1 Schematic diagrams

Figure 1. STDES-BLUEPLUG2 schematic diagram (1 of 4)



Test points - J10 & J13

Figure 2. STDES-BLUEPLUG2 schematic diagram (2 of 4)

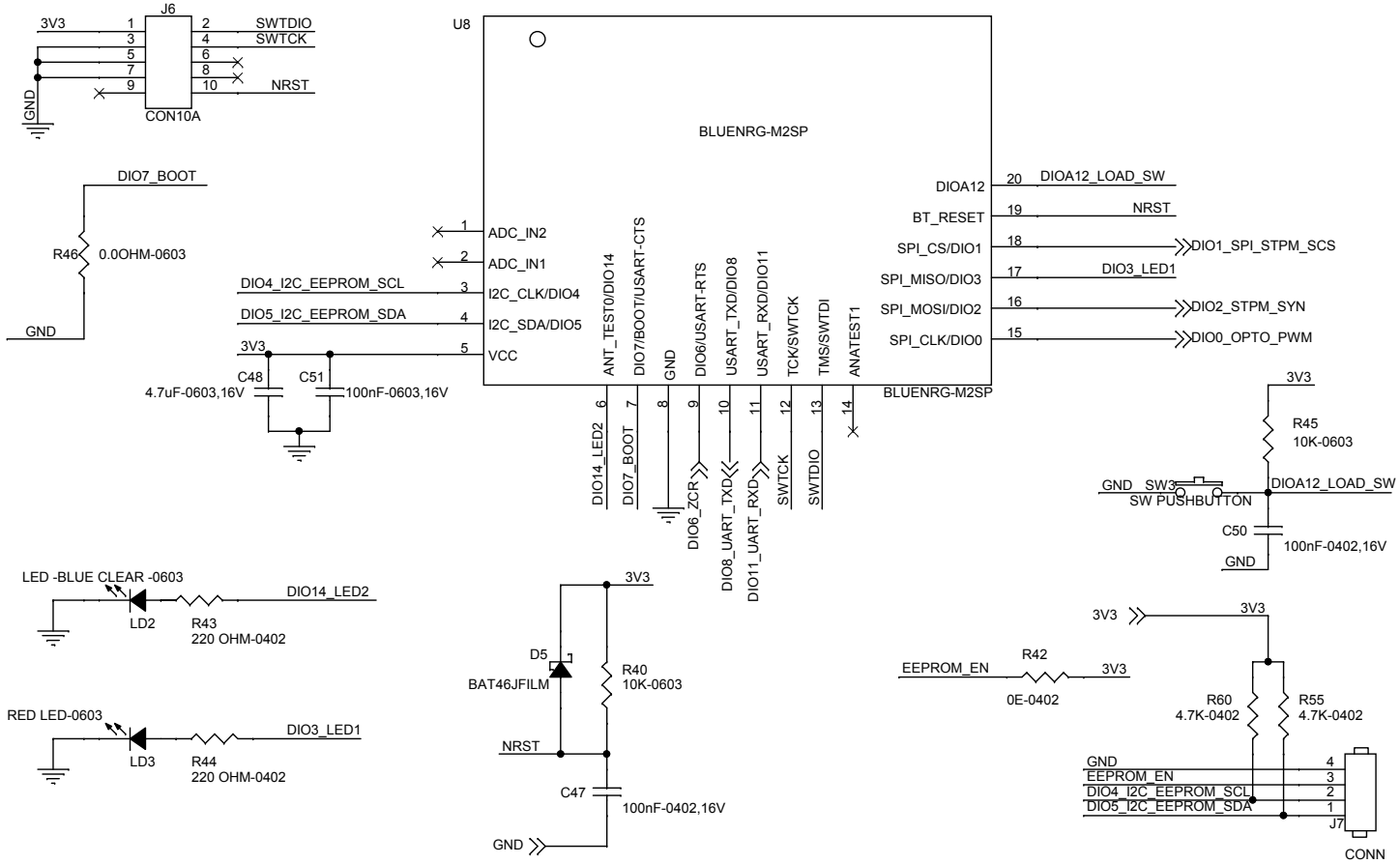


Figure 3. STDES-BLUEPLUG2 schematic diagram (3 of 4)

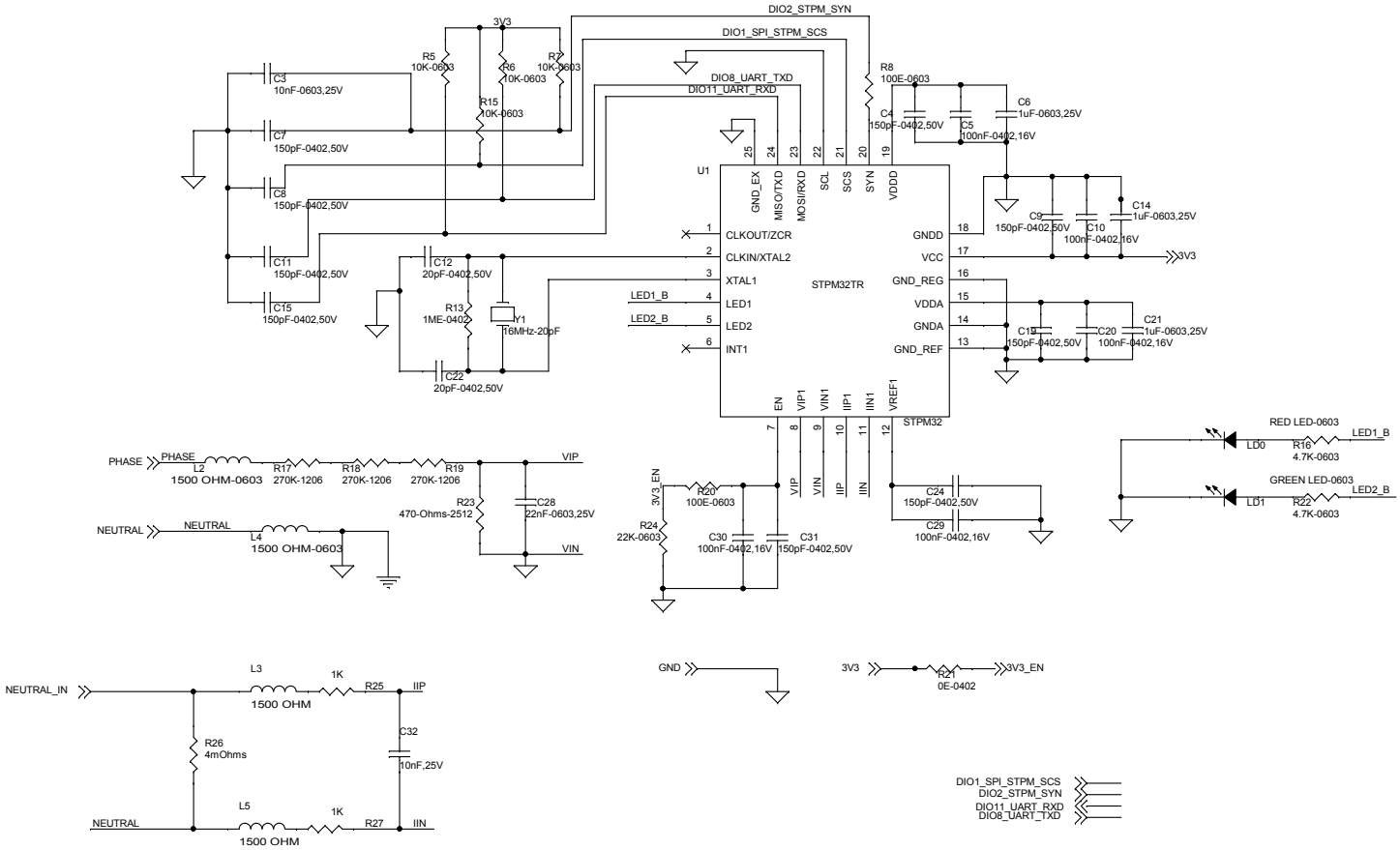
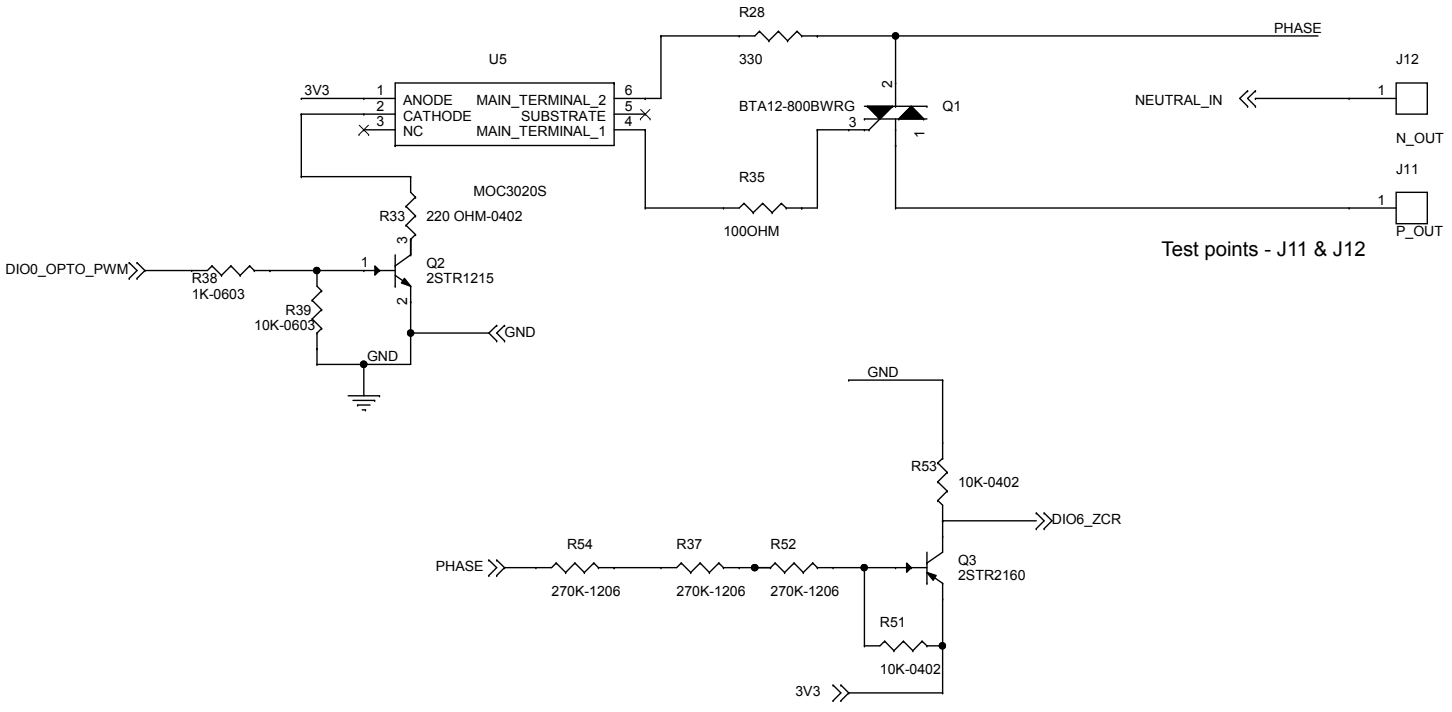


Figure 4. STDES-BLUEPLUG2 schematic diagram (4 of 4)



Revision history

Table 1. **Document revision history**

Date	Revision	Changes
11-May-2021	1	Initial release.

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