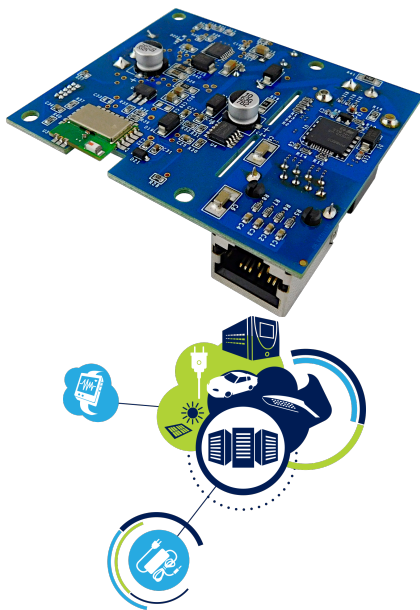


Power over Ethernet (PoE) powered 45 W LED driver with Bluetooth Low Energy (BLE) enabled control reference design



Features

- PoE-PD IEEE 802.3af/at/bt compliant
- Constant current output, working in buck topology
- Output current – 1.4 A with < 0.05% current regulation
 - Number of LEDs connected at output: 6 – 11 white LEDs (3.3 V each)
- Wireless ON/OFF and dimming control with [PoE_Lighting](#) Android application
- Digital dimming with 1% resolution
- LED driver input voltage range 37 – 57 V_{DC}
- Peak efficiency at maximum load > 95%
- Low standby power consumption < 100 mW
- Comprehensive set of protections:
 - open/no-load circuit protection
 - short/overload circuit protection
- RoHS compliant
- WEEE compliant

Description

The **STEVAL-POEL45W1** Power over Ethernet (PoE) powered LED driver reference design delivers a power output of 45 W and dims LEDs down to 1% of the maximum brightness without any flicker. The solution supports remote dimming control via Bluetooth with the [PoE_Lighting](#) Android application (available on [Google Play](#)).

You can use this reference design to develop complete indoor network-powered lighting solutions with IP-based Powered Devices (PDs), without additional AC power infrastructure, and extend the functionality to include remote data management via existing LAN networks.

The reference design features a highly integrated **PM8805** IEEE802.3bt-compliant Powered Device (PD) PoE interface, a high efficiency **LED6000** LED driver able to source up to 3 A_{DC} current, and a certified **SPBTLE-1S** Bluetooth Low Energy module, compliant with BT specifications v4.2 and BQE qualified.

For new designs, the **BLUENRG-M2SA** module for Bluetooth® low energy v5.2 is recommended.

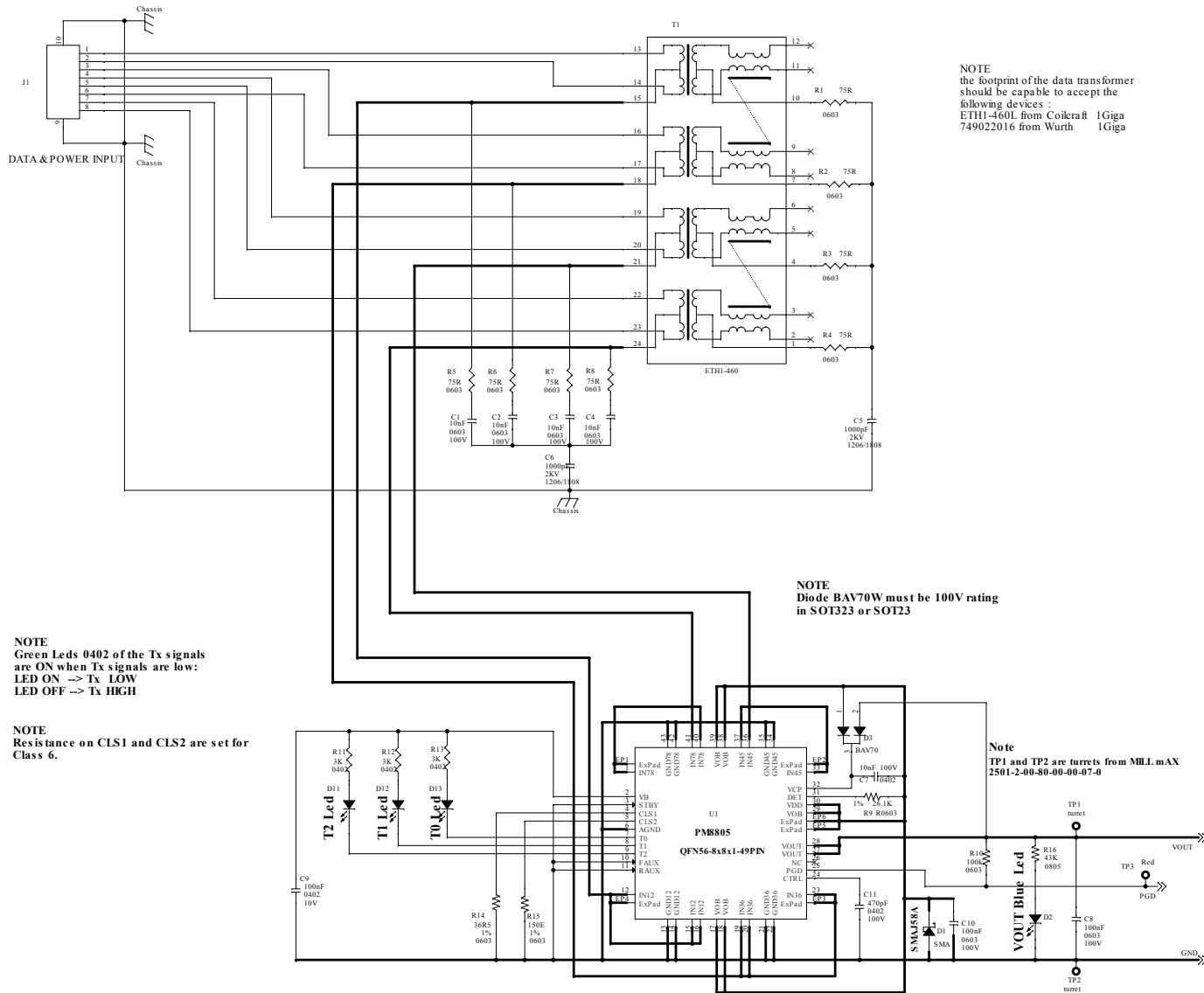
SPBTLE-1S and **BLUENRG-M2SA** are pin to pin compatible.

The **STSW-POEL45FW** board firmware is programmed via the **STSW-BNRG1STLINK** utility.

Product summary	
Power over Ethernet (PoE) supplied, 45 W LED driver with Bluetooth Low Energy (BLE) enabled control reference design	STEVAL-POEL45W1
Firmware for the STEVAL-POEL45W1	STSW-POEL45FW
IEEE802.3bt PoE-PD interface with integrated dual-active bridge	PM8805
3 A, 61 V monolithic current source with dimming capability	LED6000
Very low power application module for Bluetooth Smart v4.2	SPBTLE-1S
Very low power application processor module for Bluetooth® low energy v5.2	BLUENRG-M2SA
Android app for STEVAL-POEL45W1 LED driver	PoE_Lighting

1 Schematic diagrams

Figure 1. STEVAL-POEL45W1 board schematic (1 of 2)



NOTE
the footprint of the data transformer
should be capable to accept the
following devices :
ETH1-460L from Coikraft 1Giga
749022016 from Wurth 1Giga

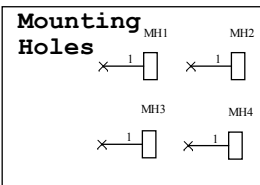
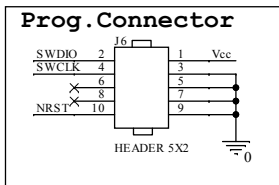
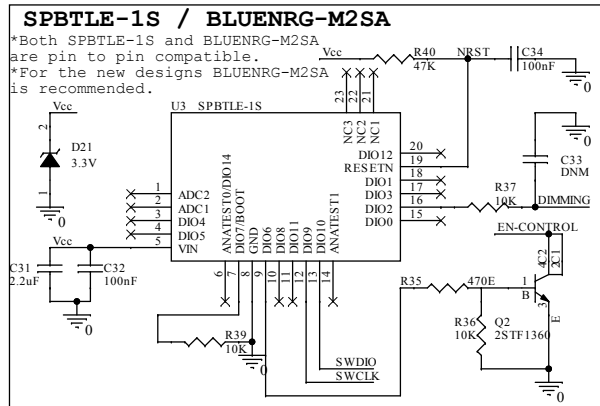
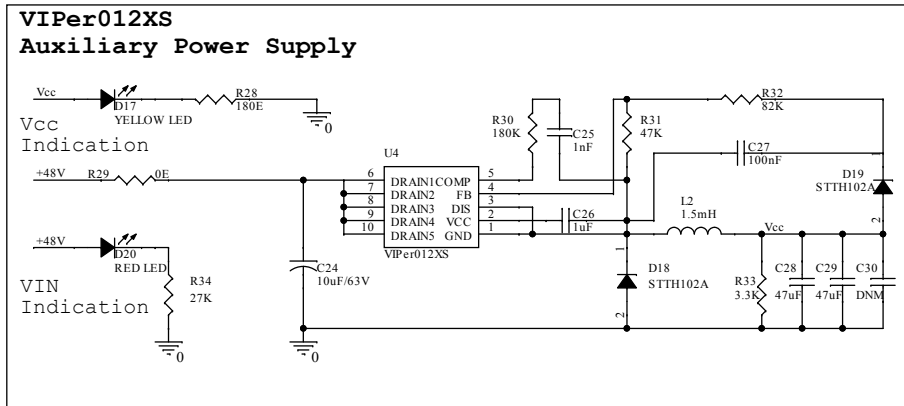
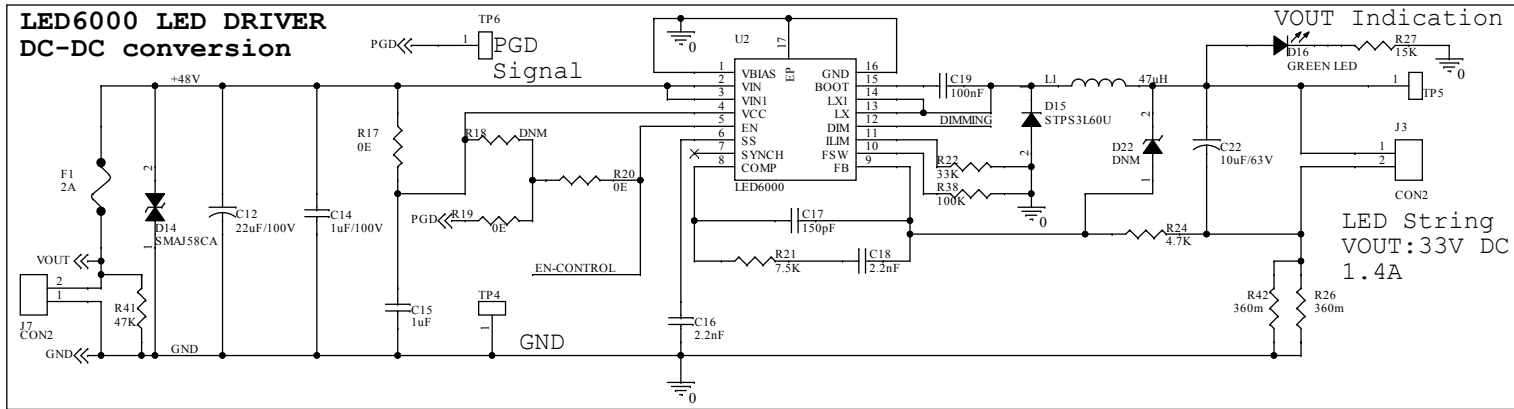
NOTE
Green Leds 0402 of the Tx signals
are ON when Tx signals are low:
LED ON -> Tx LOW
LED OFF -> Tx HIGH

NOTE
Resistance on CLS1 and CLS2 are set for
Class 6.

NOTE
Diode BAV70W must be 100V rating
in SOT323 or SOT23

Note
TP1 and TP2 are turrets from MILL mAX
2501-2-00-80-00-00-07-0

Figure 2. STEVAL-POEL45W1 board schematic (2 of 2)



Revision history

Table 1. Document revision history

Date	Version	Changes
10-Oct-2018	1	Initial release.
05-Mar-2019	2	Updated product summary table.
18-Apr-2019	3	Updated cover page title, image, product summary table, features and description.
25-Mar-2021	4	Added BLUENRG-M2SA compatibility information. Updated Section 1 Schematic diagrams .