Silvertel

EvalAg5800
User Manual

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1   Table of Contents

2   Table of Figures

3   Kit Contents

➢ Ag5800 Evaluation Board
➢ Ag5800 PD Module

4   Introduction

This manual is intended to be a guide to using the "EVALAg5800 evaluation board" with the following Silver Telecom IEEE802.3bt PD module: -

Ag5800

The board is designed to handle 10/100/1000/10GBASE-T Ethernet data rates.

4.1 EvalAg5800

The EVALAG5800 evaluation board is fitted with SilverTel's Ag5800 IEEE802.3bt PD module and can be used to extract power from an IEEE compliant PSE through its RJ45 connector J101.

5   Evaluation Board Description for Ag5800

5.1 Input

The EVALAG5800 evaluation board can be powered from the EVALAg6800 evaluation board or any IEEE802.3bt PSE. Data and power input is connected through connector J101 (see Figure 1). Data is passed through the data transformer (T100) to the data output connector J100.
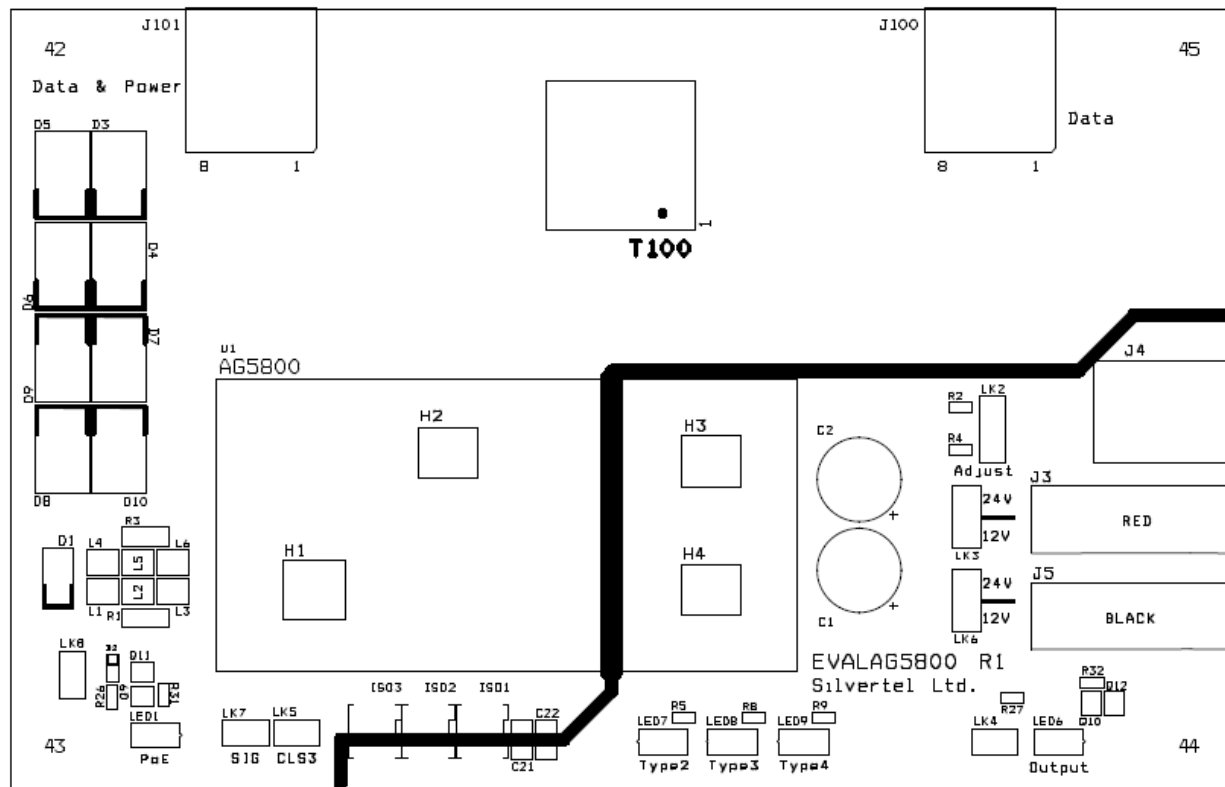
Figure 1: EVALAg5800 Board Layout

LED 1 indicates that power is being supplied to the Ag5800. This can be disabled by removing the jumper link LK8, removing this link does not affect the power being delivered to the Ag5800.

5.2 Diode Bridge Selection

The EVALAg5800 on-board diode bridge rectifiers will ensure that the correct input polarity is applied to the Ag5800 by extracting the power from the input center taps of T100 and passing the voltage to the input of the Ag5800.

Due to the amount of power and high currents involved in the IEEE802.3bt standard we would recommend using SMC package Schottky diodes with low reverse leakage current to be used as diode bridges. The EvalAg5800 is fitted with SS36 Schottky diodes configured as a diode bridge.

5.3 Input Signature and Classification

The EVALAg5800 board will automatically direct the power from J101 to the Ag5800's input.

The Ag5800 provides a 25K signature required to be powered from an IEEE compliant PSE. The EvalAg5800 has been designed to be powered from an IEEE802.3bt PSE such as SilverTel's Ag6800 PSE module. However the Ag5800 has also provisions for being powered from Legacy PSE's such as PoH or Phihongs 12.5K signature PSE.

5.3.1 Powered from POH PSE

If the EvalAg5800 is connected to a PoH (Power Over HDBaseT) PSE then by fitting a link to LK5 will alter the classification that the Ag5800 displays allowing the PSE to send the full amount of power to the Ag5800.

5.3.2 Powered from Phihong 12.5K Signature PSE

The Ag5800 is designed to work with Legacy PSE's such as Phihongs POE80U/POE60U PSE. By fitting LK7 it will connect the SA1 and SA2 signature adjustment pins altering the Ag5800 signature to 12.5K.
For all other PSE's these pins should be left unconnected.

5.3.3 PSE Detect

When the EVALAG5800 board is connected to a compliant IEEE PSE the Ag5800 will detect the Type of PSE and the on board LED's will illuminate accordingly:

For example if an IEEE802.3at (PoE+) compliant PSE such as a Phihong POE36U-1AT-R is connected via J101 the PSE will detect Class 4 and output 2-Event classification pulses. In turn the Ag5800 detects these pulses and activates the Type 2 detect output. This output is connected to an opto-isolator to cross the isolation barrier and LED 7 will be illuminated.

When the EVALAG5800 board is connected to an IEEE802.3bt Type 3 compliant PSE, the Ag5800 activates the Type 3 detect output and LED 8 will be illuminated.

When the EVALAG5800 board is connected to an IEEE802.3bt Type 4 compliant PSE, the Ag5800 activates the Type 4 detect output and LED 9 will be illuminated.

5.4 PD Output Selection

Before using the EVALAg5800 evaluation board, it is important to setup the output configuration for the correct output voltage.

The Ag5800 has two DC outputs that must be connected in parallel or in series. The outputs cannot be run independently so the EVALAg5800 board has copper pads, LK3 and LK6, which should be soldered appropriately for the selected voltage variant required.

For parallel configuration (12V output) the bottom two pads of LK3 and bottom two pads of LK6 should be soldered together respectively (position "12V") as shown in Figure 2 - VOUT1 connected to VOUT 2 and 0V 1 connected to 0V 2.

For series outputs both pads must be in position "24V" shorting the top pads of LK3 and top pads of LK6 respectively – VOUT 1 connected to 0V 2.

The DC10 connector J4 delivers a nominal 12V when the outputs are in parallel or 24V when the outputs are in series.

The output power from the Ag5800 is supplied to the connectors J3 to J5 (see Figure1), where J3 provides the positive output and J5 provides the 0V return path.

LED6 will be illuminated when the Ag5800 module outputs 12V or 24Vdc.
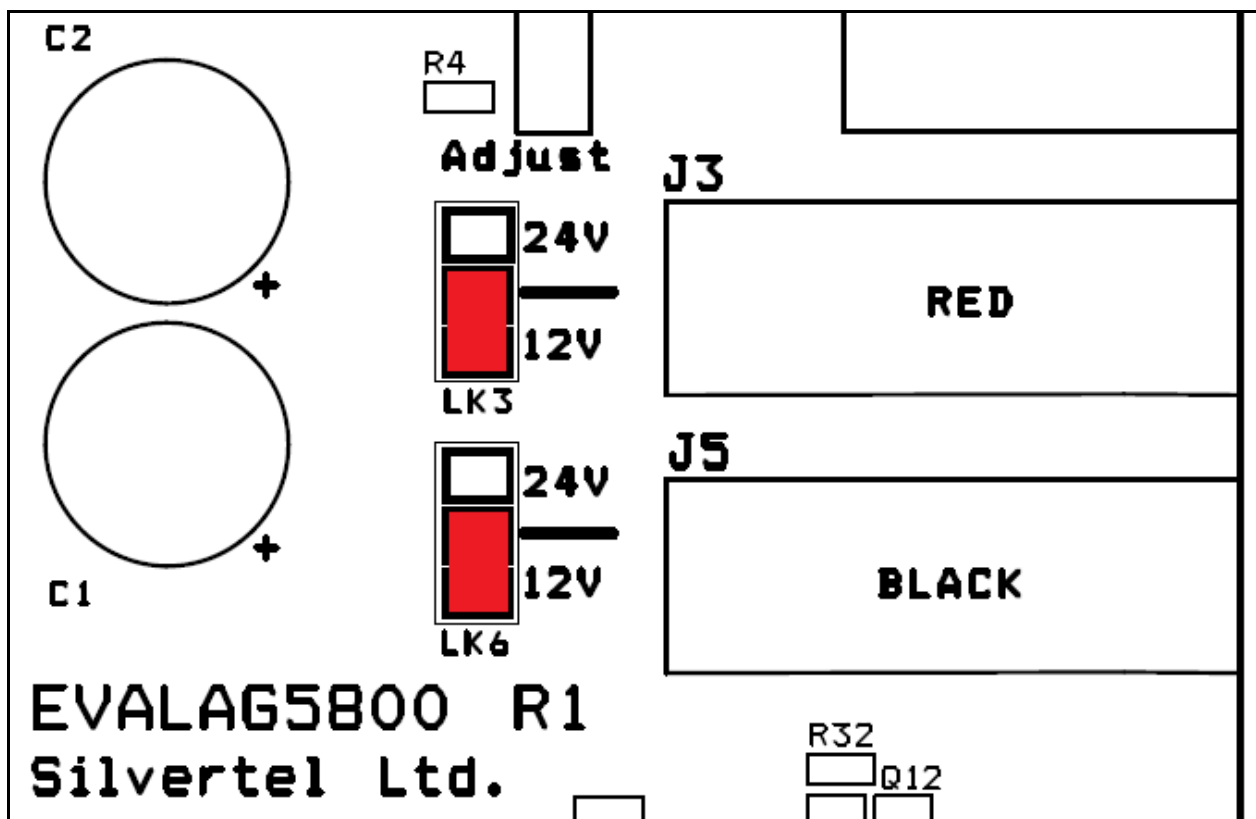

Figure 2: EVALAg5800 Voltage Configuration- 12V

5.5 Output Adjustment

The Ag5800 has an ADJ pin, which allows the output voltage to be increased or decreased from its nominal value.

LK2 is connected to the ADJ pin for the PD module to either increase or decrease the ouput voltage. When configured in 12V and the link is connected to the top and middle pins (R2), the Ag5800 output voltage will be decreased to ~10.5V. When the link LK2 is connected to the bottom and middle pins (R4), then the Ag5800 output voltage will be increased to ~15V. Figure 3: Output Adjustment shows how the ADJ pin is connected.
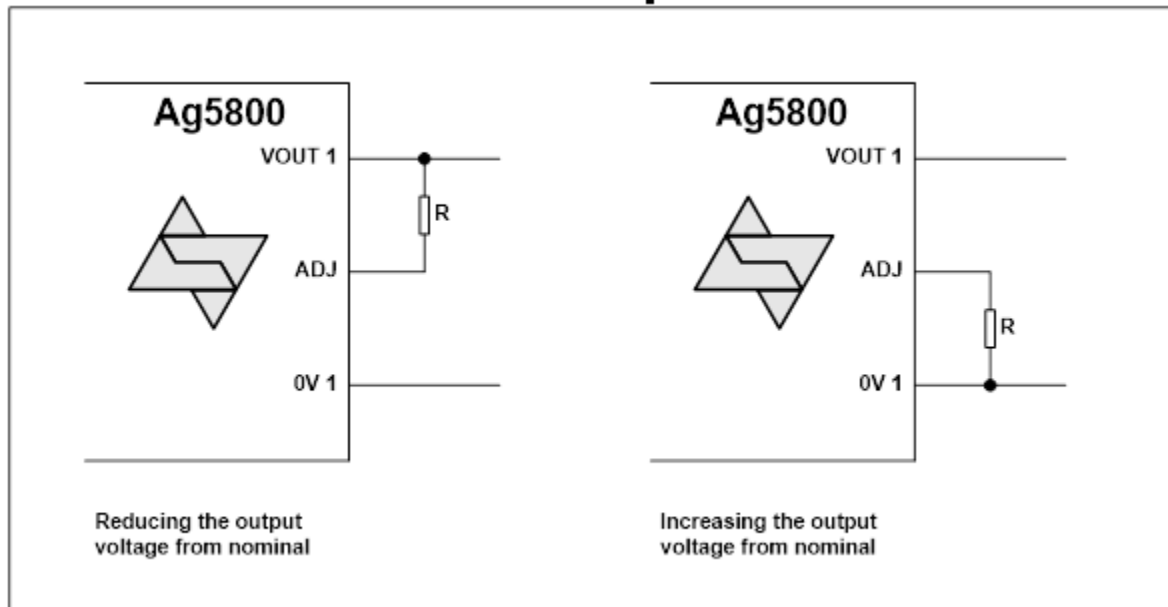

Figure 3: Output Adjustment

5.6 Heat Sink

As the Ag5800 is a 100W power supply, thermal management is essential and is designed to be used with a heat-sink at all times to distribute the heat away from the board so the board can run at full operation.

A suggested heat-sink is shown in Section 10 of the Ag5800 datasheet.

5.7 Ag5800 Information

Full operating conditions and feature set can be found in the Ag5800 product datasheet, available from www.silvertel.com.

6 Set-up

6.1 Power Supply Input

Figure 4 shows the basic set up using SilverTel's EVALAG6800 evaluation board along with the EVALAG5800 evaluation board with a power supply input to JP1.

The equipment required: -

  - ➢ Power supply Input +57V IN e.g. Meanwell SP-240-48 available from mouser which will give 57V
  - ➢ Ethernet Data Cable (CAT5e cable) Input and Output
  - ➢ CAT5e or CAT6 interlink cable (between EvalAg6800 and EvalAg5800)
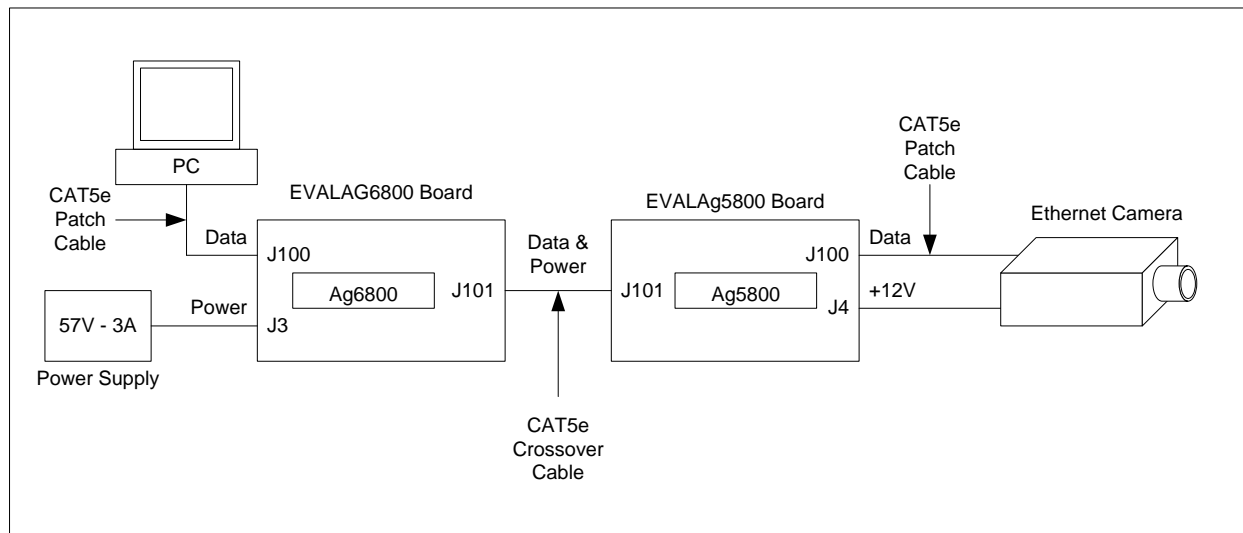 - ➢ Output power cable

Figure 4: Basic set-up

6.2 Data Input

To pass data via the Evaluation boards, the data input (e.g. Internet) can be connected to J100 on the Ag6800 Eval Board using a cat5e cable. The data is then passed through the data transformer, where power is added and sent out via connector J101 of the Ag6800 Eval Board. The Data and power is extracted through J100 of the EVALAg5800 board and then divided into its separate power and data through the data transformer. The data output is then available from J100 of the EvalAg5800 Board, which can then be connected to your device.

6.3 Link settings

LK2 – Output adjust select

LK4 – Output power LED

LK5 – Connection for POH PSE

LK7 – Signature Adjust- 12.5K

LK8 – Input power LED circuit

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