NLP04 Power Supply
User Guide

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Introduction

Numato Lab's **NLP04 Power Supply** is a versatile product for high current DC-DC Switching Regulator Applications. The board comes with **ST1S10** with a step-down PWM current mode switching regulator with 90% efficiency at the 2 A output current for**(1.2V to 5V)**. This board will be available at 5 different voltages such as **1.2V, 1.8V,2.5V, 3.3V, 5V** each at **2A** current.

Applications

- Home Automation.
- Lighting Control.
- Garden Equipment Control.
- Industrial Automation.
- Consumer Electronics.
- Networking/Server/Storage.
- Computer/Workstations and Desktops.
- Telecommunications Infrastructure.
- Product Prototype Development.
- Can be used as Power Supply for Wide Verity of Circuits which requires more Current.

Board Features

- Input Voltage(VIN) 5V to 12V.
- Voltage Output(VOUT) 1.2V -5V @ 2A.
- Operating Temperature 0-70°C.
- Integrated Power MOSFET with up to 2A Continuous Current.
- Very small in Form Factor 30.48mmX21.59mm(1.20inX.850in).
- 4 Layer Design for more Power Handling.
- Dynamic short circuit protection.
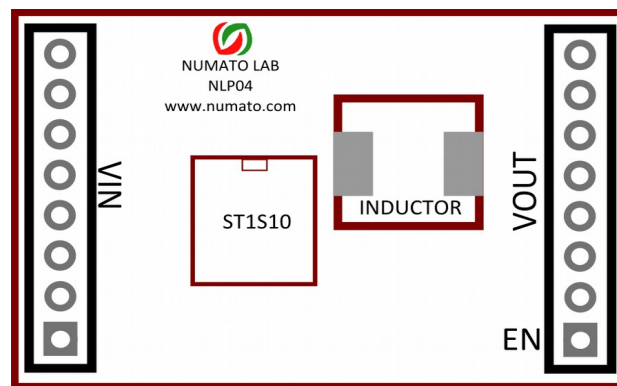
How to use the module

The following section describes how to use this module.

Components/Tools required

Along with the module, you may need the items in the list below for easy and fast installation.

1. 12V DC Power Supply.

Connection Diagram

VIN/ DC Power Supply

This module uses **5V – 12V** DC external power supply to function properly. Make sure to connect the power supply in correct polarity. Connect the **positive** terminal of the power supply to the **+12V** terminal on the module.

Using a product similar to Numato's DC Barrel Jack Adapter is recommended if the power supply has a Barrel Jack connector (See the image on right).
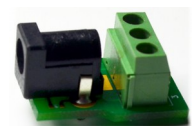
Connecting power supply incorrectly can cause damage to the module and/or other devices.

VOUT Selection

The table below summarize the resistor values for corresponding output voltage selection.

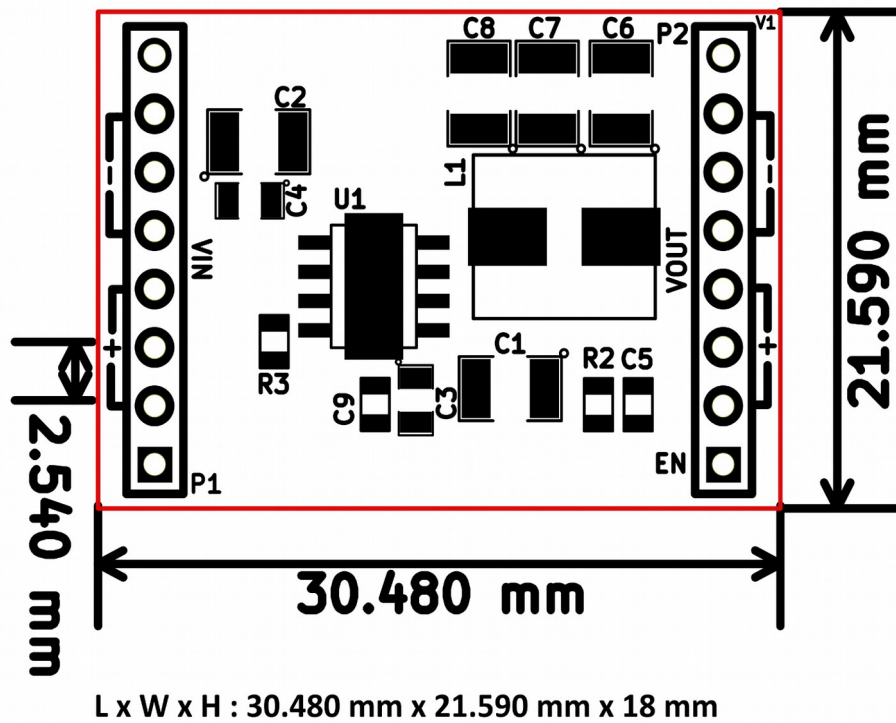| VOUT	R3	R(R2)
1.2V	10kΩ	5.6kΩ
1.8V	10kΩ	12kΩ
2.5V	10kΩ	21kΩ
3.3V	10kΩ	31kΩ
5.0V	10kΩ	51kΩ

External Enable-EN

The user can enable/disable the device either by internally(default) or by using the external enable pin through a micro controller. The device can be externally enabled/disabled by accessing the header pin named **EN** at the VOUT side on the board.

Technical Specifications

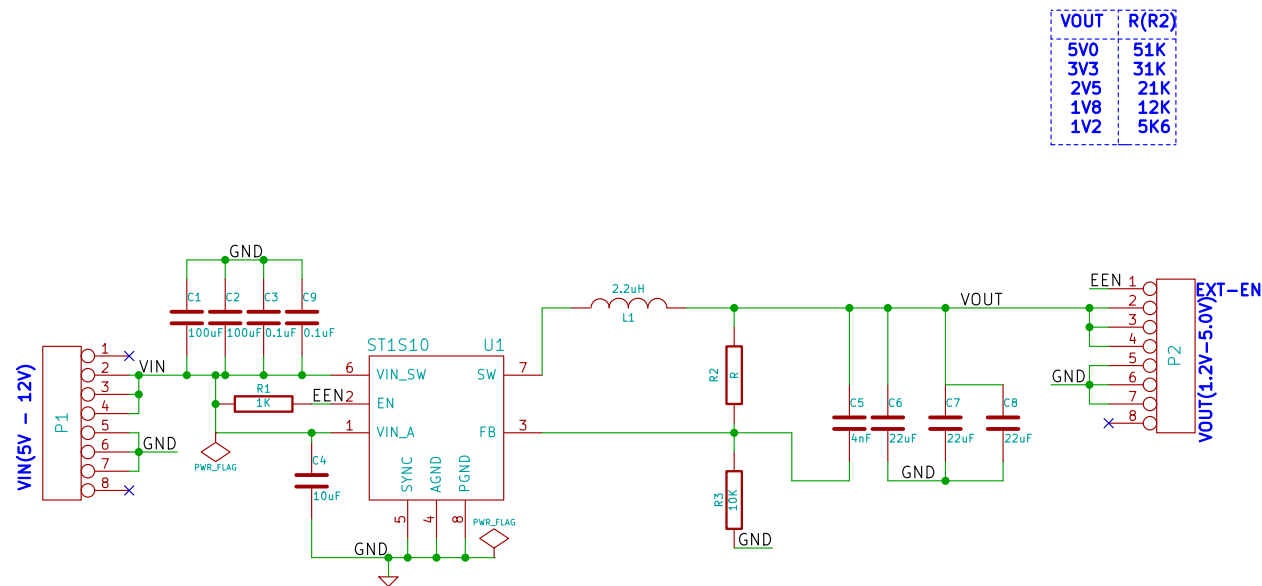| Parameter *	Value	Unit
Basic Specifications		
Input voltage VIN	5 to 12	V
Output voltage VOUT	1.2 to 5	V
Output current	2	A
Shutdown temperature	80	°C
Inductor Specifications		
Inductance(tolerance%)	2.2(±20%)	µH
Current Rating(rms)	7	A
Current-Saturation	11	A
DC Resistance(DCR)	20	mΩ

All parameters considered nominal. Numato Systems Pvt Ltd reserve the right to modify products without notice.

Physical Dimensions

L x W x H : 30.480 mm x 21.590 mm x 18 mm

Schematics

See next page.

VOUT	R(R2)
5V0	51K
3V3	31K
2V5	21K
1V8	12K
1V2	5K6

P1 — VIN(5V – 12V)

VIN

GND

C1 100uF C2 100uF C3 0.1uF C9 0.1uF

GND

R1 1K

EEN2

C4 10uF

ST1S10 U1

VIN_SW 6
EN
VIN_A 1

SW 7
FB 3

SYNC 5 AGND 4 PGND 8

GND

PWR_FLAG

2.2uH L1

VOUT

R2 R

R3 10K

GND

C5 4nF C6 22uF C7 22uF C8 22uF

GND

EEN 1
2
3
4
P2
5
GND 6
7
8

VOUT(1.2V–5.0V)

EXT–EN