

使用说明书

OPERATING MANUAL

BUCK3603 DC-DC 数控降压模块 NC Buck Module

中文说明书

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ENGLISH MANUAL

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2013 年 12 月

杭州均测仪器仪表有限公司

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目录

联系方式.....	2
开箱检查.....	3
第一章 概述.....	4
一、仪器简介.....	4
二、仪器特性.....	4
三、技术指标.....	4
第二章 仪器说明.....	5
一、模块说明.....	5
二、显示说明.....	6
第三章 操作说明.....	7
一、简约模式使用方法.....	7
二、全功能模式使用方法.....	7
注意事项.....	9
保修及售后服务.....	9

联系方式

Website: www.junteks.com

开箱检查

当您得到一台新的 BUCK3603 DC-DC 数控降压模块时，建议您按照以下步骤对仪器进行检查。

1. 检查是否存在因运输造成的损坏。

如发现包装纸箱或气泡袋保护垫严重破损，请先保留，直到整机和附件通过测试。

2. 检查包装箱内物品是否齐全。

包装箱的内容如下所述。如果内容不符或者仪器有损坏，请与经销商或本公司联系。

主机：BUCK3603 DC-DC 数控降压模块 1 台

附件：用户手册(pdf 版) 1 份

3. 检查整机。

如发现仪器外观破损、仪器工作不正常，或未能通过性能测试，请与经销商或本公司联系。

第一章 概述

一、仪器简介

BUCK3603 DC-DC 数控降压模块是一款全数字显示的数控降压模块，体积小，功率大，效率高，工作稳定。加入了高速微控制器的精密测量计算，可以精确调节输出电压电流大小，内置 10 组存储位置，可随时存储、调出参数，方便使用。配有四位八段 LED 数码管，可以实时显示电压、电流、功率、容量等参数。同时，本机具有上电后自动输出，自动轮显参数等功能，可根据使用的需要开启或者关闭。

二、仪器特性

- 1、采用先进的微处理器，可精确调节输出电压、电流；
- 2、带有记忆保存功能，可存储 10 组参数，且可以自由存储、调出；
- 3、采用台湾原产的高品质 LM2596S-ADJ 作为功率器件，配合外围精密运放构成的 CV 和 CC 环路，极大地提高了模块的整体表现；
- 4、全数字显示，方便易用；
- 5、具有恒压，恒流状态；
- 6、采用 4 位高亮度数码管，可以实时显示输出电压、电流、功率以及容量等参数；
- 7、自动/手动切换显示电压、电流、功率、容量等参数；
- 8、具有输出 OUT，恒压 CV，恒流 CC 指示灯，可以实时查看工作状态；
- 9、可设定上电后是否自动输出；
- 10、可一键保存当前设定的电压电流值。

三、技术指标

项目	参数
模块性质	非隔离降压 (BUCK)
输入电压	6V~40V
输出电流	0~3A

输出电压	0~36V
转换效率	最高 92%
工作频率	150KHz
短路保护	恒流
工作温度	- 40℃~+85℃
控制方式	数字控制+数码管显示
电压调节/显示分辨率	0.01V
功率显示最小分辨率	0.001W
电流调节/显示分辨率	0.001A
容量显示最小分辨率	0.001AH
输出纹波	≤50mV
重量	43g
外围尺寸（长×宽×高）	66×50×21(mm)

表 1-1 BUCK3603 技术指标

第二章 仪器说明

一、模块说明

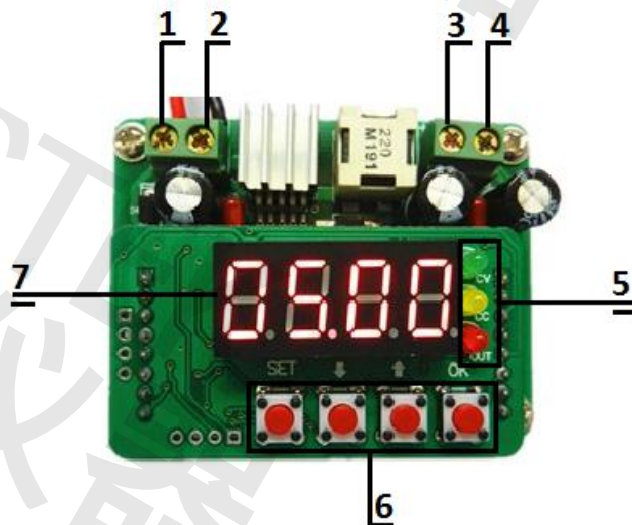


图 2-1 BUCK3603DC-DC 数控降压模块图示

标号	说明	标号	说明
1	输入端正极	5	工作状态指示灯
2	输入端负极	6	操作按键
3	输出端正极	7	LED 数码管
4	输出端负极		

表 2-1 BUCK3603 DC-DC 数控降压模块说明

二、显示说明

数码管显示内容	内容说明
00.00	电压值, 00.00~36.00V
0.000	电流值, 0.000~3.000A
P.000、P0.00、P00.0、P000.	功率值, 单位 W, 小数点的位置随着功率的变化而改变位置。例如: P.123 表示 0.123W, P1.23 表示 1.23W, P12.3 表示 12.3W, P102.表示 102W
C.000、C0.00、C00.0、C000.	容量值, 单位 AH, 小数点的位置随着容量的变化而改变位置。例如: C.123 表示 0.123AH, C1.23 表示 1.23AH, C12.3 表示 12.3AH、C123.表示 123AH
--0-	特殊功能0
--1-	特殊功能1
--2-	特殊功能2
--y-	开启特殊功能
--n-	关闭特殊功能
SA.* (*表示 0~9)	保存参数到存储位置 0~9 中的某个存储位置
Lo.* (*表示 0~9)	调出存储位置 0~9 中的某一组参数
----	保存参数
┌--n	恢复出厂设置

表 2-2 BUCK3603 DC-DC 数控降压模块显示说明

第三章 操作说明

本模块有两种工作模式：简约模式和全功能模式，出厂默认是简约模式，如果需要使用全功能模式，可自行开启。

一、简约模式使用方法：

1、正确连接输入、输出，保证输入电压在要求的范围内，严禁反接。输入电压须高于输出电压 1.5V 以上。

注：输入电压范围：6V~40V；

输出电流范围：0V~3A；

输出电压范围：0A~36A。

2、设定所需的电压电流值。需要注意的是，电压电流的显示没有单位，但两者有区别，电压显示值的小数点在第二位（如 **00.00**），电流显示值的小数点在一位（如 **0.000**）。设定电压电流值的方法如下：

上电后默认显示的是电压设定值，电压值显示的格式是“**00.00**”，按下“SET”按键可以切换到电流设定值，电流值显示的格式是“**0.000**”，按下▲按键增大设定值，按下▼按键减小设定值，短按精确设定，长按可以快速设定。电压或者电流值发生变化后，按下“SET”键后会显示“——”，表示保存了当前设定的电压或者电流值，本仪器默认的存储位为 M0。若没有改变电压或者电流值，按“SET”键会切换到电流或者电压值。

3、设定完成后按下“OK”按键就可以输出了。

4、输出状态下，在显示电压值时按下▲按键可以增大输出电压，按下▼按键可以减小输出电压，在显示电流值时按下▲按键可以增大电流设定值，按下▼按键可以减小电流设定值，短按精确设定，长按可以快速设定。输出状态下短按“OK”按键可以切换显示电压、电流、功率、容量等参数，长按 3 秒可以自动轮显，再次长按可以取消轮显。在轮显状态下，按▲▼按键无效。

5、输出状态下，按下“SET”按键可以关闭输出。

二、全功能模式使用方法：

本模块有三项特殊功能，默认都处于关闭状态，如有需要，可自行开启。

功能 0: 上电后自动输出

功能 1: 保存与调出设定的参数, 显示功率和容量

功能 2: 输出后自动轮显参数

开启/关闭方法:

长按“OK”按键, 然后给模块通电, 数码管会在“--0-”、“--1-”、“--2-”之间循环显示, 在显示“--0-”时松开“OK”按键会开启或者关闭功能 0, 在显示“--1-”时松开“OK”按键会开启或者关闭功能 1, 在显示“--2-”时松开“OK”按键会开启或者关闭功能 2。若松开“OK”按键后数码管显示“--y-”表示已开启当前的功能, 显示“--n-”表示已关闭当前的功能。

1、启用功能 0 后上电之后会自动输出。

2、启用功能 1 之后, 在未输出状态下, 按下“SET”按键可以在电压“00.00”, 电流“0.000”, 调出参数“Lo.-0”和保存参数“SA.-0”之间循环切换。下面举例说明该功能:

例如需要把 10V, 1.5A 保存在存储位置 1 并且调出存储位置 1 的参数。

① 按下“SET”按键切换到电压值, 设定电压值为 10.00V, 按下“SET”按键保存当前设定的电压值。

② 按下“SET”按键切换到电流值, 设定电流值调为 1.500A, 按下“SET”按键保存当前的电流值。

③ 按下“SET”按键切换到“SA.-0”, 按▲▼按键选择存储位置, 这里需要调整到“SA.-1”, 按下“OK”按键就可以把设定的“10V, 1.5A”保存在存储位置 1。

④ 按“SET”按键调整到“Lo.-0”, 按▲▼按键选择需要调出的存储位置的参数, 这里需要调整到“Lo.-1”, 按下“OK”按键就可以调出存储位置 1 的参数。

⑤ 本机共有 0~9 共 10 组存储位置, 每组存储位置都可以任意设定电压电流值, 各个存储位置互相独立, 互不影响。

3、启用功能 2 后在输出时会自动轮显电压、电流、功率、容量等参数。

注意事项

- 1、正确连接输入输出，严禁反接，反接会烧坏模块。
- 2、本模块是降压模块，输入要高于输出 1.5V 以上。
- 3、输出 2A 以下自然散热即可，输出 2A 以上须加强散热。

保修及售后服务

感谢您购买明禾电子的产品。为最大限度地利用您的新产品的功能，我们建议您采取以下简单几项步骤：

1. 阅读安全及有效使用指南。
2. 阅读保修条款和条件。

保修条件：

仪器自发货之日起保修期为一年。在保修期内本公司根据情况选择对故障仪器进行维修或更换。如需维修，请将本产品邮寄到我公司。

下列情况不在保修范围：

使用者操作或维护不当；使用用户自己提供的软件或接口；未经许可对仪器进行修改。

OPERATING MANUAL

BUCK3603 DC-DC NC Buck Module

December 2013

Hangzhou Junsi Instrument Co., Ltd.

Contents

1. Contact.....	13
2. Inspecting Package Contents.....	13
2.1 Check if there is damage due to transportation.....	13
2.2 Check package contents.....	13
3. Summary.....	14
3.1 Brief introduction.....	14
3.2 Main function.....	14
3.3 Technical data.....	14
4. Instrument Introduction.....	15
4.1 Structure Description.....	15
4.2 Display Introduction.....	15
5. Operation.....	16
5.1 Simple mode.....	16
5.2 Fully functional mode.....	17
6. Cautions.....	19

1. Contact

Website: www.junteks.com

2. Inspecting Package Contents

When you get a new BUCK3603 DC-DC NC buck module, please inspect the instrument as follows:

2.1 Check if there is damage due to transportation

If the package is damaged, please retain them until the instrument and accessories are tested.

2.2 Check package contents

Contents of the case are as follows, if the content does not match with the packing list or the instrument is damaged, please contact us.

BUCK3603 DC-DC NC buck module	1pcs
-------------------------------	------

Accessories: User manual(pdf)	1pcs
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2.3 Check the machine

If the machine was damaged; did not work properly or failed to pass performance tests, please contact your dealer or our company.

3. Summary

3.1 Brief introduction

BUCK3603 DC-DC NC buck module is a digital control and digital display step-down module. It has small volume, high power, high efficiency and high stability. Join the precision measurement calculation of microcontroller, the module can regulate the output voltage and current precisely. The meter has 10 groups of memory locations and the parameters can be stored and called up at any time. The module is very easy to use. Equipped with a four LED digital tubes, the meter can display the voltage, current, power, capacity and other parameters in real time. Meanwhile, the machine has automatically output after power, auto rotate functions. The functions can be turned on or off according to use.

3.2 Main function

3.2.1 The use of advanced microprocessors can be precisely regulated output voltage and current;

3.2.2 With save function, can store 10 sets of parameters, and can freely store, recall;

3.2.3 Using high-quality LM2596S-ADJ as the power devices, with CV and CC loop consisting of peripheral precision op amp, which greatly improves the overall performance of the module;

3.2.4 Digital display, easy to use;

3.2.5 With a constant voltage, constant current status;

3.2.6 Using four high-brightness LED, can display the output voltage, current, power, and capacity and other parameters in real time;

3.2.7 Automatic / manual switch to display voltage, current, power, capacity and other parameters;

3.2.8 With OUT, CV and CC indicator, you can view real-time the work status;

3.2.9 The module can set whether to automatically output after power-on;

3.2.10 Can easily save the current set of voltage and current values.

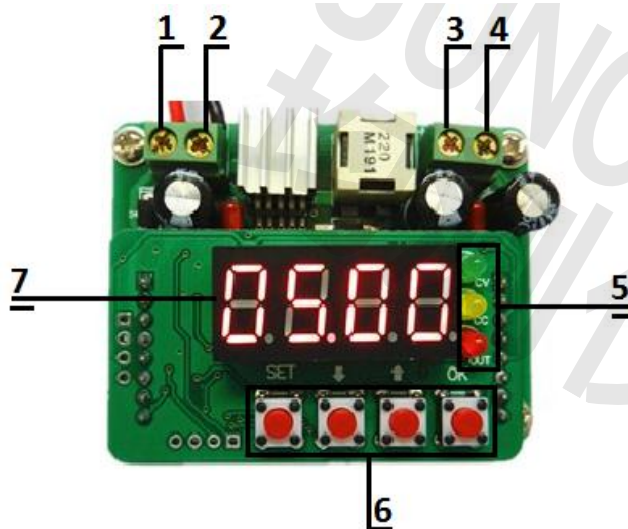
3.3 Technical data

3-1 Technical data

Item	Parameter
The modular nature	Non-isolated Buck (BUCK)
Input Voltage	6V~40V
Output Current	0~3A
Output voltage	0~36V
Conversion efficiency	92%(max)
Frequency	150KHz
Short circuit protection	Constant Current
Operating Temperature	- 40℃~+85℃
Control method	Digital control + LED display
The voltage regulator / display resolution	0.01V
The minimum resolution of power Display	0.001W
The current regulator / display resolution	0.001A
The minimum resolution of capacity	0.001AH
Output Ripple	≤50mV
Weight	43g
Dimensions(W*H*D)	66×50×21(mm)

4. Instrument Introduction

4.1 Structure Description



Item	Introduction	Item	Introduction
1	Positive input	5	Indicator of work status
2	Negative input	6	Button
3	Positive output	7	LED
4	Negative output		

4-1 The introduction of BUCK3603

4.2 Display Introduction

Item	Introduction
00.00	Voltage:00.00~30.00V
0.000	Current:0.000~8.000A
P.000、P0.00、P00.0、P000.	Power value, the unit is W, the position of the decimal point is changed with power. For example: P. 123 represents 0.123 W, P1.23 represents 1.23 W, P12.3 represents 12.3 W,

	P102. represents 102 W.
C.000、C0.00、C00.0、C000.	Capacity value, the unit is AH, the position of the decimal point is changed with capacity. For example:C.123 represents 0.123AH, C1.23 represents 1.23AH, C12.3 represents 12.3AH, C123.represents 123AH
--0-	Special function 0
--1-	Special function1
--2-	Special function2
--y-	Open the special function
--n-	Close the special function
SA.* (* represents 0~9)	Save the parameters to the store location 0~9
Lo.* (* represents 0~9)	Bring up the parameters from storage location 0~9
----	Save the parameter
┌--n	Restore factory settings

4-2 The display introduction of BUCK3603

5. Operation

The module has two kinds of usage: one is simple mode, another is fully functional mode. The default is simple mode, if you need fully functional mode, you can open it by yourself.

5.1 Simple mode

5.1.1 Connect input and output properly ,you should guarantee that the input voltage is in the range of requirement. It is forbidden to reverse connection, or it will be burnout. The input voltage must be higher than the output voltage of 1.5V or more.

The range of input voltage:6V~40V;

The range of output current:0A~3A;

The range of output voltage:0V~36V.

5.1.2 Setting the voltage and the current value. You should note that there are no units of the current and voltage, users can distinguish them through the position of decimal point. The decimal point position of the voltage is in the second decimal place (e.g., 00.00), and the current is in the first (e.g., 0.000).

The setting method is as follows:

After electrify, the LED default display the voltage value, the format of voltage display is "00.00", press "SET" button to switch to the current value, the format of current value display is "0.000". Press the ▲ button to increase the value, press the ▼ button to reduce the value, press the button can accurate regulation, press the button for a while can regulate quickly. If the voltage or current value has been changed, press the "SET" button the LED display the "----" said that the voltage or the current has been saved. If there is no change of voltage or current value, press "SET" button will switch to the current or voltage value.

5.1.3 After the setting, press the "OK" button to output.

5.1.4 Under the output state, press the ▲ button can increase the value and press the ▼ button can reduce the value when the LED display the voltage value, press the ▲ button can increase the value and press the ▼ button can reduce the value when the LED display the current value. Press the button can accurate regulation, press the button for a while can regulate quickly. Under the output state, press "OK" button can switch display parameters such as voltage, current, power and capacity, press the button for 3 seconds will automatically take turns to display, press "OK" button for a while again will cancel automatic take turns to display. In the output state, the ▲ and ▼ button is invalid.

5.1.5 Under the output state, press the "SET" button to close the output.

5.2 Fully functional mode

This module has three special functions, the default is closed, if necessary, you can open them by yourself.

Function 0: After electricity, it will output automatically.

Function 1: Save and bring up the parameters, display the power and capacity.

Function 2: Take turns to show the parameters after output automatically.

5.2.1 Open/close method

Press the "OK" button for a while, then electricity, the LED will take turns to show among "--0-", "--1-" and "--2-". When displaying "--0-", release the "OK" button, it will open or close the function 0. When displaying "--1-", release the "OK" button, it will open or close function 1. When displaying "--2-", release the "OK" button, it will open or close function 2. After releasing the "OK" button, the "--y-" displays in the digital tube indicates that you have already open the current function, the "--n-" means that you have closed the current function.

5.2.2 Enable the function 0, it will automatic output after electricity.

5.2.3 Enable the function 1, in the condition of no output, press the "SET" button, it will take turns to display the parameters which among voltage "00.00", current "0.000", bring up the parameters "Lo.- 0" and save the parameters "SA.- 0". We will illustrate the function as follow:

For example: we need store 10V, 1.5 A in the storage location 1 and bring up the parameter from storage location 1.

1. Press the "SET" button to switch to the voltage value, setting voltage value of 10.00 V, press "SET" button again to save the voltage value.
2. Press the "SET" button to switch to the current value, setting current value of 1.500 A, press "SET" button again to save the current value.
3. Press the "SET" button to switch to the "SA.-0", press the ▲ or ▼ button to select the storage location, here we need to adjust to the "SA.-1", press "OK" button to store the "10 V, 1.5 A" in the storage location 1.
4. Press the "SET" button to switch to "Lo.-0", press the ▲ or ▼ button to select the storage location which the parameter need to bring up, here we need to adjust to the "Lo.-1", then press the "OK" button to bring up the parameters of storage location 1.
5. This module has a total of 10 groups of storage location of 0~9, each

storage location can be arbitrarily set the voltage and current value, and each location is independent of each other.

5.2.4 Enable the function 2, after output, it will automatic take turns to display the parameters such as voltage, current, power and capacity.

6. Cautions

1. Connect input and output properly , it is forbid to reverse connection, otherwise it will be burnout.
2. This module is a step-down module, input voltage need over output voltage more than 1.5 V.
3. Output under 2A natural cooling, output above 2A shall strengthen heat dissipation.

7. Warranty and service

Thank you for purchasing our products. To maximize the use of the new product features, we recommend that you take the following steps:

1. Read safe and efficient use instruction.
2. Read the warranty terms and conditions.

We warrants to the original purchaser that its product and the component parts thereof will be free from defects in workmanship and materials for a period of one year from the data of purchase.

We will repair or replace, at its' option, defective product or component parts.

Returned product must be accompanied by proof of the purchase date.

Exclusions: This warranty does not apply in the event of misuse or abuse of product or as a result of unauthorized alternations or reapers. It is void if the serial number is alternated, defaced or removed.