LB01/LB02 使用说明书

User Manual

输出功能及范围：OUTPUT

FUNC	OUT UNIT	SET RANGE	SET STEP
DC.V	V	0~11.00V	0.01/0.1/1
DC.mV	mV	0~110.00mV	0.1/1/10
Ω (Only LB02 have)	Ω	20~400Ω (Only LB02 have)	1/10/100
DC.mA	mA	0~24.00mA	0.01/0.1/1/4
TC	R	0~1700℃	1/10/100
	S	0~1600℃	
	B	500~1800℃	
	K	-200~1370℃	
	E	-200~1000℃	
	J	-200~1200℃	
	T	-200~400℃	
	N	-200~1300℃	
RTD (Only LB02 have)	Pt100 (Only LB02 have)	-200~850℃	1/10/100
	Cu50 (Only LB02 have)	-50~150℃	
24V	24V mA	24V: Connot be set. Current measurement: 0~24.000 mA	NONE

测量功能及范围：MEASURE

功能 FUNC	测量类型 MEASURE UNITS	测量范围 MEASURE RANGE	分辨力 RESOLUTION
直流电压 DC.V	V	0~30.000V	0.001V
直流毫伏 DC.mV	mV	0~150.00mV	0.01mV
欧姆Ω	Ω	0~999.9Ω	0.1Ω
直流电流 DC.mA	mA	0~30.000mA	0.001mA
热电偶 TC	R	0~1700℃	1℃
	S	0~1600℃	
	B	500~1800℃	
	K	-200~1370℃	
	E	-200~1000℃	
	J	-200~1200℃	
	T	-200~400℃	
	N	-200~1300℃	
热电阻 RTD	Pt100	-200~850℃	1℃
	Cu50	-50~150℃	
量程换算 Range switch	mA	0~99900 工程单位（适用于电流测量和24V 输出的电流测量功能）	最大 4, 最小 1(和工程量相关)

LB01 无电阻、热电阻输出功能，LB02 有电阻、热电阻输出功能，其他功能相同。

Cautions

1.This instrument uses multiple internal self-recovery insurance and a quick one-time fuse blows, but no protective measures can not guarantee 100% complete and reliable instrument and just do our best to protect the safety of users possible .Any position of the instrument, can withstand 30V DC or AC voltage is below 20V 5 seconds when an error operation. Any stalls can not access to 220V mains. If the violation of security requirements above may result in personal injury, damage to the instrument

2.When the meter is working, internally generated some heat, which to some extent affect the measurement accuracy of the temperature measurement devices inside. The size of this error and the level of ambient temperature, The current size of the active output, the size of the load resistance, temperature of the operator' s hand have a relationship .Any internal integrated temperature measurement instruments can not avoid such errors .To overcome this error, we recommend using an external Pt100 temperature probe.

3.Resistance output, which has a certain relationship with the external resistor output excitation source, if the current is too small, the output resistance will have a certain degree of error, therefore, ordinary multimeter to check the output resistance may be a little error.

Different of LB01 and LB02

LB01 has not function of Resistance output.

LB02 has function of Resistance output .

Features:

LB01 and LB02 multifunction process calibrator covers the PLC, DCS, ESD, field instrumentation ,valves and other maintenance required functions, performance greatly improved. Security fully in place and clear display with backlight and shell with a new ABS material, copper connector contact resistance is minimal. Compact and portable, Panel layout ,simple operation. V, mV, mA, resistive input and output has a corresponding button directly transferred out, the operation is extremely simple.

Language selection

The instrument has two built-in languages :Chinese and English. The default is Chinese vision. If you want to change language set, operation is as follows: press SET button till the symbol "C" or"E" is displayed on the lcd screen. Press ↗ ↘ to switch Between "C" and "E". "C":Chinese "E":English

Instructions:

 : **measure symbol**  : **output symbol**

V mA mV/TC Ω/RTD buttons have the measure and output function, On the premise of no range change (for example, switch from to) ,press any one of those 4 buttons for once, will switch

between the measure and output of each stalls. Note： when switch from one stalls to another stalls ,Will back to the state that this stalls left（state keep）.

1.voltage measure： whichever stalls you at, press V , if the screen display  , press again V , wait the screen display  and " V " symbol, then can enter voltage .

2.Current measure： whichever stalls you at ,press mA ,if the screen display  ,press again mA ,wait the screen display  " mA " symbol ,then can enter current measure.

3.mV measure and Thermocouple temperature measure：

3.1 mV measure： whichever stalls you at, press mV/TC ,if the screen display  ,press again mV/TC ,wait the screen display  and " mV 、E、K、B、S、R、J、T、N" any one of the symbol ,under this state ,if don' t display the "mV " symbol, press ← or → to up/down page ,wait bottom display " mV "symbol, then can enter mV measure.

3.2 E type Thermocouple temperature measure：

whichever stalls you at ,press mV/TC ,if the screen display  , press again mV/TC ,wait the screen display  and " mV 、E、K、B、S、R、J、T、N" any one of the symbol ,under this state ,if don' t display the "E symbol, press ← or → to up/down page ,wait display " E "symbol, then can enter E type Thermocouple temperature measure .At this moment, display the temperature value that Thermocouple temperature measuring.

Note: Thermocouple temperature measure involves cold end compensation issue ,So, when do the thermocouple temperature measure ,lower left of the screen will display the cold end temperature indication ,how many number shows ,cold degree compensation will be the numbers. When doing the Thermocouple temperature measure ,make sure set the correct Cold end temperature value. If wrong set, will lead to big error .The method of setting Cold end temperature: press °C ,will see there' s one number at both right and left side ,left side number indicate it's the manually input cold end temperature value ,when the number flashing ,press ↗ ↘ to increase/reduce; right side number is the measured value by the inner temperature measurement element of meter ,can not change ,cycle press °C ,will change the flash turn of these 2 numbers ,whichever those number flash, indicate which comes into effect.

3.3 other types Thermocouple temperature measure:

This meter designed for 8 kinds of regular Thermocouple temperature measure function（E、K、B、S、R、J、T、N),the detail use instruction is the same as E type Thermocouple temperature measure.

4、resistance measure and Pt100、Cu50 temperature measure:

4.1 resistance measure: whichever stalls you at ,press Ω RTD,if the screen display  ,press Ω RTD again ,wait the screen display  and " Ω、Pt100、Cu50" any one of the symbol ,under this state ,if don' t display the "Ω" symbol ,press ← or → to up/down page, wait display "Ω "symbol ,then can enter resistance measure.

4.2 Pt100 temperature measure: whichever stalls you at, press Ω RTD ,if the screen display  ,press Ω RTD again, wait the screen display  and " Ω、Pt100、Cu50" any one of the symbol, under this state ,if don' t display the "Pt100" symbol, press ← or → to up/down page, wait display "Pt100 "symbol ,then can enter Pt100 temperature measure. Because this meter use two-wire system measure method ,if Pt100 measure

element far from this meter, will bring additional error, in order to compensate this error ,there’ s compensation option setting. The method as below: first use the resistance measure function, to measure the resistance value sent by three-wire system pt100,choose the min resistance（normally ,only few ohm）,write down. Cycle press SET button ,when indicate “ Ω” symbol, use  to set the resistance value that measured just now. Then back to Pt100 temperature measure function ,measure those 2 wires that with bigger resistance of three-wire system ,so can get the correct temperature value.

4.3 Cu50 temperature measure： method is the same as Pt100 temperature measure.

5.Range Conversion:

the returned current measurement function of 24V and the current measurement have with a stalls range conversion function. Use as follows: In the current measurement or output return 24 stalls under the current measurement, press the left or right arrow, bottom of the screen will appear SCL symbol, which enters the range of the conversion feature of the use of the environment. If you use this feature you must set the correct parameters. First, you must set the correct current range, for example, you want to convert 4-20ma current to 0-10000 data, these two parameters must be set correctly. Setting method: press the SET button, you can see the default boot 04 and 20 two numbers, there mA symbol below,

these two figures is the current range. you can use the  to change. Cycle Press SET button, symbol S-H appears below the screen, this one is the upper range, where it should be set to 10000, press SET button again, appears "S-L" symbol below the screen, this is the lower limit of the range, It should be set to 0.Press again SET button, the screen below will appear "SQU" sign, this is set to signal whether extracting a root ,for flow measurements generally require extraction, extraction if needed, this option can be changed to 1. To this setup is complete. Returns the corresponding scale conversion function, input current, the current corresponding engineering data can be visually displayed.

Output function instruction:

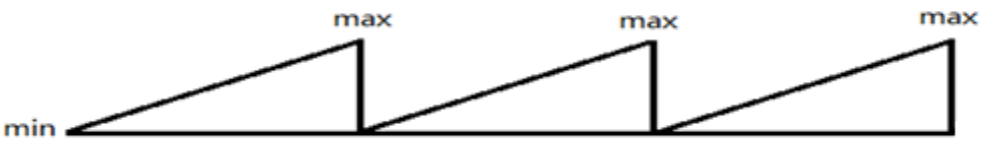
1、voltage output: whichever stalls you at, press V ,if the screen display  ,press V again ,wait the screen display  and " V " symbol, then can enter voltage output .Output voltage setted by  . These 2 buttons control increase/reduce by little ,work with "STEP" button, can change step, can increase/reduce 0.1V once or 0.01V, the default step is 0.1V. These 2 buttons  control increase/reduce by big ,step is 1V.

2、Current output：

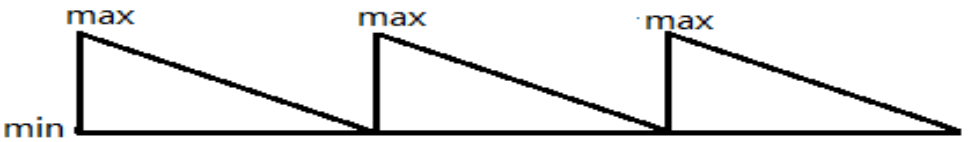
2.1、source current output： whichever stalls you at, press mA ,if the screen display  ,press mA again , wait the screen display  ,check whether the screen will display “source” 、 “ mA ” symbol, but don’ t display “Prog 1” 、 “Prog 2” 、 “Prog 3” . If don’ t display “source” 、 “ mA ” symbol ,press← or→ to up/down page ,until display “source” 、 “ mA ” ,then can enter source current output state. Output current setted by↗ ↘ ⍋ ⍒. These 2 buttons ↗ ↘control increase/reduce by little, work with “STEP” button ,can change step ,can increase/reduce 1 mA， 0.1 mA or 0.01 mA once .These 2 buttons⍋ ⍒ control increase/reduce by big ,step is 4 mA.

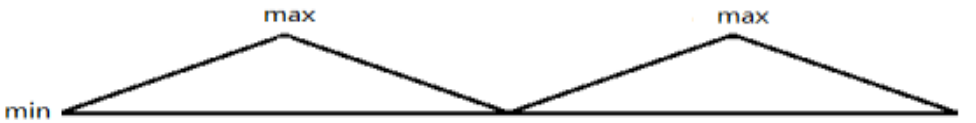
2.2、Source current program output：

“Prog 1” state：Curve of current change：



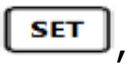
“Prog 2” state：Curve of current change：

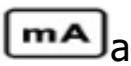




There’ re 3 methods of programming for source current program output ,detail output time as above curves. The method as below：

“Prog 1” program output method：whichever stalls you at, press mA ,if the screen display ,press mA again ,wait the screen display ,check whether the screen will display “source” 、 “Prog 1” and “ mA ” symbol. If not in this state ,press ← or → to up/down the page ,until display “source” 、 “Prog 1” 、 “ mA ” ,then can enter source program 1 current output state. Under this state, the current step is 1mA,but the step range and change speed can be setted manually. The method of setting the max and min as below: press SET ,will

display 2 numbers ,left number indicates the min current ,right number indicates the max current ,use  those 4 buttons can revise the min, the max. These 2 buttons  can revise the range of the min、These 2 buttons  can revise the range of the max. Note: the min can’t less than 0,the max can’t bigger than 24,the min can’t bigger than the max . Press again  ,enter the speed change setting option ,use  these 2 buttons to revise range of speed change ,the setting range can be 0.5~5s . “Prog 2” 、 “Prog 3” program output method refer “Prog 1” .

2.3、sink current program output: whichever stalls you at ,press  ,if the screen display  ,press  again ,wait the screen display  ,check whether top of the screen will display “sink” 、 “ mA ” symbol, but don’t display “Prog 1” 、 “Prog 2” 、 “Prog 3” ,If don’t display “sink” 、 “ mA ” symbol ,press  or to up/down page ,until display “sink” 、 “ mA ” ,then can enter sink current output state . The output current setted by those 4 buttons  . These 2 buttons  control increase/reduce by little ,work with

"STEP" ,can change step ,increase/reduce 0.1 mA or 0.01 mA once ,the default step is 0.1mA. These 2 buttons control increase/reduce by big ,step is 4mA.

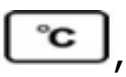
Note: Under All current output state, if the probe is open , setting value on the screen will flash.

3、mV output and Thermocouple temperature output:

3.1、mV output: whichever stalls you at ,press ,if the screen display ,press again ,wait the screen display and " mV 、E、K、B、S、R、J、T、N" any one of the symbol ,under this state ,if don' t display "mV " symbol , press or to up/down page ,waitf the screen display " mV "symbol, then can enter mV output. The output setting by these 4 buttons . These 2 buttons ,control increase/reduce by little ,work with "STEP" ,can change step ,increase/reduce 1 mV or 0.1 mV once, the default step is 1 mV .These 2 buttons control increase/reduce by big ,step is 10 mV.

3.2、E type Thermocouple temperature output:

whichever stalls you at ,press ,if the screen display ,press again ,wait the screen display and

“ mV 、E、K、B、S、R、J、T、N” any one of the symbol ,under this state ,if don’ t display “E ” symbol ,press  or  to up/down page ,wait the screen display “ E “symbol ,then can enter E type Thermocouple temperature output. At this moment, will show the value of thermocouple temperature output. The output set by these 4 buttons  . These 2 buttons  control increase/reduce by little ,work with “STEP” ,can change step ,increase/reduce 10 ℃ or 1 ℃ once, the default step is 10 ℃.These 2 buttons  control increase/reduce by big ,step is 100℃ . Note： Thermocouple temperature output comes to cold end temperature compensation issues. when Thermocouple temperature output, there’ s cold end temperature indication at the lower left of the screen, How much it displays, then how much cold end temperature compensates . when Thermocouple temperature output ,make sure set the correct cold end temperature value, If set wrong ,then will bring big error. The setting method of cold end temperature: press  , will see there’ s 1 number at left side and right side, the left number is cold end temperature value that input by manually, When the number flashing, can use these 2 buttons  to increase or reduce; The right number is the value that measured by Internal temperature element Of the

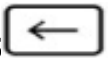
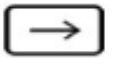
meter , the number can’ t be changed, Cycle press °C, will change the Flashing sequence of the left and right number. Which of these 2 number flashing, which comes to be effective.

3.3、Other types of Thermocouple temperature output

This meter designed for 8 kinds of commonly used Thermocouple （E、K、B、S、R、J、T、N） temperature output function, the use method is the same as E type Thermocouple temperature output. To set a value that lower than cold end temperature output is nonsense.

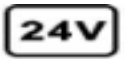
4、Resistance output and Pt100、Cu50 temperature output:

4.1、Resistance output： whichever stalls you at, press Ω RTD ,if the screen display  , press Ω RTD again , wait the screen display  and “Ω、Pt100、Cu50” any one of the symbol ,under this state ,if don’ t display “Ω” symbol , press ← or → to up/down page ,wait the screen display “Ω “symbol, then can enter Resistance output. The output set by these 4 buttons ↗ ↘ ⬏ ⬎. These 2 buttons ↗ ↘ control increase/reduce by little,work with “STEP” ,can change step, increase/reduce 10Ω or 1Ω once. the default step is 10 Ω. These 2 buttons ⬏ ⬎ control increase/reduce by big, step is 100Ω.

4.2、Pt100 temperature output: whichever stalls you at , press  ,if the screen display  ,press  again ,wait the screen display  and " Ω、Pt100、Cu50" any one of the symbol ,under this state ,if don' t display "Pt100" symbol , press  or  to up/down page ,wait the screen display "Pt100 "symbol, then can enter Pt100 temperature output. The output set by these 4 buttons  . These 2 buttons  control increase/reduce by little ,work with "STEP" ,can change step ,increase/reduce 10 ℃ or 1℃ once, the default step is 10℃. These 2 buttons  control increase /reduce by big ,step is 100℃. The setting method of Cu50 temperature output is the same as Pt100 temperature output.

Note: Through these four buttons,  you can set positive and negative temperature output . When external exciting current doesn' t exist or connect is reversed, the setting value will flash.

5. 24V output with current measurement:

whichever stalls you at ,press  ,enter 24V output with current measurement state .This state indicates the external equipment provide the 24V power supply ,output current can" t less than

24mA （this is determined by equivalent internal resistance of the external equipment).When output 24V voltage, meanwhile measure the current that flows through the 24V power supply, the current will display on the screen.

Other functions introduction:

1. Cancel toggle switch, through the key switch, do not operate for a long time (about 30 minutes), automatic shutdown. In the state of charge, auto-off function is disabled. While charging the instrument will not automatically shut down, the production line for continuous use.

2. Charging and status indication. Switch status can be charged, in the boot state, if not full power strips, power bar will scroll while charging, if power bar is full, there will be no prompt. In the case of depleted, the charging process takes 5-6 hours. This machine uses the lithium polymer battery. Do not try to run out of power. Place a long time needs to be fully charged battery.

3. Replace fuse. This instrument uses 5 * 20mm 200mA littelfuse quick fuse, for replacement, try to use the littelfuse brands, it must be replaced as 250V/200mA fuse.

4、function and parameter please refer to Chinese Manual.

*The data sheet is subject to change without notice. For more information, please visit: **www.brightwinelectronics.com**