

DU-1200

User Manual





Copyright Statement

- The copyright of the specification belong to our company.
- Can't copy, extract or translate any content in this manual at any method if no written authority agreement of our company or permission according to the relate stipulates in copyright laws.
- If the written specification and contents in this operating manual has changes, please understand that we not inform additionally.



Inspection and calibration statement

The instrument already pass through the inspection and calibration in factory of our company before leave the factory. The program and steps of calibration are accordance with the standards and specification of the electric inspection center.

Product quality warrant

Our company make ensure the produced and manufactured instruments all are pass through the strict quality confirmation, at the same time, make ensure that our company responsible to freely repair within one year after leave factory if found the instrument parts failure. But if they are the situations that users self modify circuit, function or self repair the instrument and renewal parts or external case damaged, our company will not provide the maintain warrant service.

This warrant not include the appendix equipment of this instrument and other accessories which not produced by our company. Within one year's maintain warrant period, please send the failure machine set back to the maintain center of our company or the distributor places which appointed by our company, our company will maintain well.

If this machine set happen failure under that abnormal use, or manual careless, or non manpower control, example earthquake, flood, rebellion, fire or other non manpower control factors, our company will not provide free maintain service.

Avoid fire or human body hurt

- Use the suitable power supply wire

Use this product specially used power supply which verified in the locate country/region.

- Select suitable power supply voltage machine type

Select the machine model which accordance with the local power supply voltage according to the application field, this analyse instrument has two machine types like 110V/220V.

- Use the test fixture



Please use our company assorted special test fixture or test cable, the user self manufacture or other company's test fixture or test cable maybe caused incorrect test result.

■ Start machine preheat time

The start machine preheat time shouldn't less than 15 minutes to make ensure the machine accurately measure.

■ Product grounded

The product grounded through the grounding wire of the power supply wire. Must connect the grounding wire to ground to avoid electric shock. Please must make this product correctly grounded before connect the input terminal or output terminal of this product.

■ Follow all terminal rated value

Please follow all rated value and marks on the product to avoid fire or electric shock. Please firstly check the product manual before connect the products, know well about the detail information which relate to rated value.

■ Cut off power supply

Power supply switch able to cut off the power supply of products. Please refer to the instruction of the relate position. Don't ward off the power supply switch, this power supply switch must be able to provide to user use any time.

■ Never open cover to operate

Please don't running this product when external cover or panel opening.

■ Maintain suitable air venting

Bad air venting will caused instrument temperature riding, further caused the instrument damaged. Should keep better air venting when using, fix time check the air venting port and fan.



Safety terms and symbols

The terms in this manual: *the below terms maybe occur in this manual*



Warning

Warning statement point out the conditions and actions which maybe harm to life safety of operators.



Attention

Attention statement point out the conditions and actions maybe caused this product damaged or data loss.



Content

I	Installation	错误！未定义书签。
1.1	Unpack and inspection	7
1.2	Package	7
1.3	Preparation before use	8
1.4	Around environment requirements of instrument working.....	8
II	Familiar with instrument	错误！未定义书签。
2.1	Technical specifications	10
2.2	Start instrument power supply	13
2.3	Homepage of instrument.....	13
III	System setting	错误！未定义书签。
3.1	Buzzer	16
3.2	External signal of control.....	16
3.3	Language	16
3.4	Backlight luminance	16
3.5	Keyboard lock	17
3.6	GPIB address	17
3.7	RS232 Baud rate	17
3.8	Lower output alarm.....	17
IV	Communication and orders	错误！未定义书签。
4.1	Joggle specification	18
4.2	Orders	19



I Installation

This chapter mainly introduce the unpack, inspection, preparation and storage before use and other rules of our electric products.

1.1 Unpack and inspection

The package has damages when received this test instrument, then please check whether the machine appearance has deformation, scratches or panel damages and others. Please inform our company or the distributors immediately, and please remain the package box and the filling materials in the case, convenient to know and analyse the reasons. Our service center will help maintain or renewal the new machine, please don't return the product immediately before not inform our company or the distributors.

Standard accessories:

S/N	Name	Qty
1	DU-1200 main machine	1 set
2	Power supply wire	1 piece
3	Disc	1 piece
4	est report	1 set
5	Test clips	1 pair

1.2 Package

■ Original package:

Please remain all original package materials, if the instrument must be returned to factory for maintain, please use the original package materials to pack. And please contact the electric maintain center of our company. Please must send back all the accessories like the power supply wire, please clearly note the failure appearance and reasons. Additionally, please clearly note **“Fragile cargo, please transporting carefully”** on the package.

■ Other packages



If unable to find out the original package materials to pack, please pack according to the below instruction:

- 1) Firstly use foam cotton pack the machine well.
- 2) Must use the materials which able to anti vibration filling around the machine, the thickness bigger than 30mm.
- 3) Seal the case body well.
- 4) Clearly note “Fragile cargo, please transporting carefully”

1.3 Preparation before use

Please make ensure whether the power supply voltage accordance with the marks at back of machine before start the power supply switch of machine, whether specification of fuse is correct, must firstly close the input power supply if need renewal the fuse, to avoid the electric shock danger.

The connection among the instrument, tested objects and input power supply must be strictly follow the stipulated wiring in the relate contents of this specification, otherwise, it maybe damage this instrument.

1.4 Around environment requirements of instrument working

- Please don't use the machine in the more dust, more vibration, direct sunshine environment with corrode gas;
- Temperature 0-40°C, the relative humidity 20%-80%;
- The height under altitude 2000m (6500inch);
- Not allow the obstacles blocked within 10cm where behind the instrument, to make ensure the better air venting;
- Can't contain the combustible gas or inflammable matters in the air around the instrument;



- The position of working station setting should make the non working staffs far away the instrument. Do best to not set it at the position where common staffs must pass through.
- Do best to use non electric conduct material working table and working platform to test the shell of fixtures.



II Familiar with instrument

Analyse instrument adopt the big size colorful display screen design, able to provide the human-computer interface which unable to contrast by the traditional instruments.

2.1 Technical specifications

Instrument specification

DU-1200 Calibrator Specifications:

Output				
	Range	Resolution	Output Range	Accuracy
Voltage	100mV	2uV	$\pm 6\text{mV} \sim 100\text{mV}$	$\pm(0.03\% \text{ of rdg} + 5\text{DGT})$
	1V	20uV	$\pm 100\text{mV} \sim 1\text{V}$	$\pm(0.03\% \text{ of rdg} + 5\text{DGT})$
	10V	0.2mV	$\pm 1\text{V} \sim 10\text{V}$	$\pm(0.02\% \text{ of rdg} + 5\text{DGT})$
	30V	0.6mV	$\pm 10\text{V} \sim 30\text{V}$	$\pm(0.03\% \text{ of rdg} + 5\text{DGT})$
Current	1mA	0.2uA	$\pm 50\text{uA} \sim 1\text{mA}$	$\pm(0.03\% \text{ of rdg} + 5\text{DGT})$
	10mA	0.5uA	$\pm 1\text{mA} \sim 10\text{mA}$	$\pm(0.015\% \text{ of rdg} + 3\text{DGT})$
	20mA	1uA	$\pm 10\text{mA} \sim 20\text{mA}$	$\pm(0.01\% \text{ of rdg} + 1\text{DGT})$
	50mA	1uA	$\pm 20\text{mA} \sim 50\text{mA}$	$\pm(0.015\% \text{ of rdg} + 2\text{DGT})$
Pt 500	100.000 Ω	\		$\pm 0.05\%$
	280.977 Ω	\		$\pm 0.05\%$
Measurement				
Voltage	100mV	2uV	$\pm 1\text{mV} \sim 100\text{mV}$	$\pm(0.03\% \text{ of rdg} + 5\text{DGT})$
	1V	20uV	$\pm 100\text{mV} \sim 1\text{V}$	$\pm(0.03\% \text{ of rdg} + 5\text{DGT})$



	10V	0.2mV	$\pm 1V \sim 10V$	$\pm(0.02\% \text{ of rdg} + 5\text{DGT})$
	30V	0.6mV	$\pm 10V \sim 30V$	$\pm(0.03\% \text{ of rdg} + 5\text{DGT})$
Current	1mA	0.2uA	$\pm 10\mu A \sim 1mA$	$\pm(0.03\% \text{ of rdg} + 5\text{DGT})$
	10mA	1uA	$\pm 1mA \sim 10mA$	$\pm(0.015\% \text{ of rdg} + 3\text{DGT})$
	20mA	1uA	$\pm 10mA \sim 20mA$	$\pm(0.01\% \text{ of rdg} + 1\text{DGT})$
	50mA	1uA	$\pm 20mA \sim 50mA$	$\pm(0.015\% \text{ of rdg} + 2\text{DGT})$
Other				
Display		5" TFT LCD		
Display update rate		5 ~ 100 / S		
Power Supply		220Vac.50/60Hz,10VA		
Interface		GPIB.RS232		
Operating Temperature		0°C~45°C		
Dimension (H x W x D)		112mm X 320mm X 260mm		



Picture 2-1

1. Power supply switch

Power supply switch marked symbol “1” (ON), press down to open the instrument power supply, mark symbol “0” (OFF), press down to shut off power supply.



2. Display screen

480*270 TFTLCD display screen, as the indicator to display the setting page or test result.

3. Menu key

As the soft keys of menu operation of voltage, current gear, test parameters setting, system setting and others.

4. Cursor operating key

This key area include four direction keys, return (enter) key, backspace key and Esc key;

5. Multiply function key

This keyboard include digit 0~9, 26 pieces English words “SBCD..YZ”, *~_., similar to T9 keyboard input method on mobile phone. Additionally, it still has four functions, the function description as the below:

a) LOCAL:

Release communication lock, the instrument communication with computer through RS232 or GPIB, or lock the keyboard on the front panel in future, press down this key then lock released.

b) Code/Unit:

Engineering mode code input and setting parameters unit selection.

c) Trigger:

Trigger test keys.

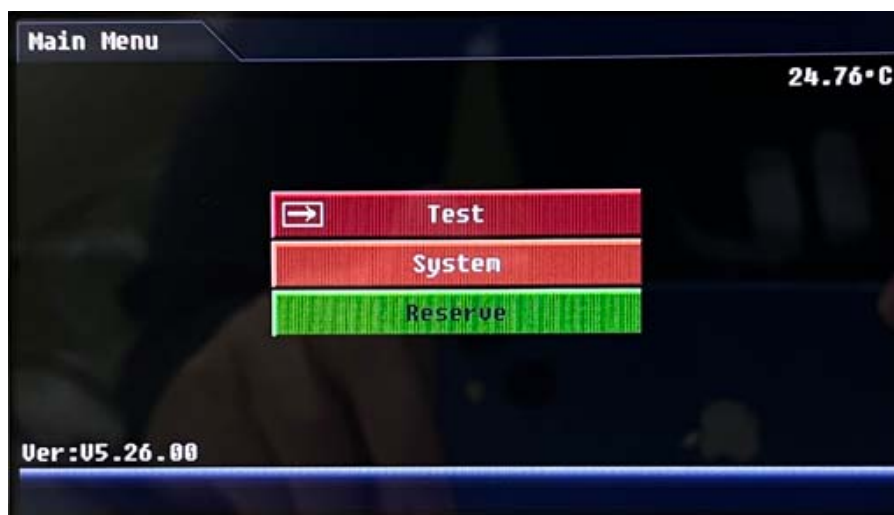
6. Output terminals

This instrument output adopt 4 wires output, please attention at the wiring.



2.2 Start instrument power supply

Please make ensure whether power supply input voltage is correct before start machine, and already grounded well. Open the power supply switch at down left corner of instrument, LCD display screen occur the homepage shown as picture 2-2.



Picture 2-2

2.3 Homepage of instrument

The homepage of instrument shown as picture 2-2, the contents on the page shown as the below:



Picture 2-3



1. Right side multiply function keys:

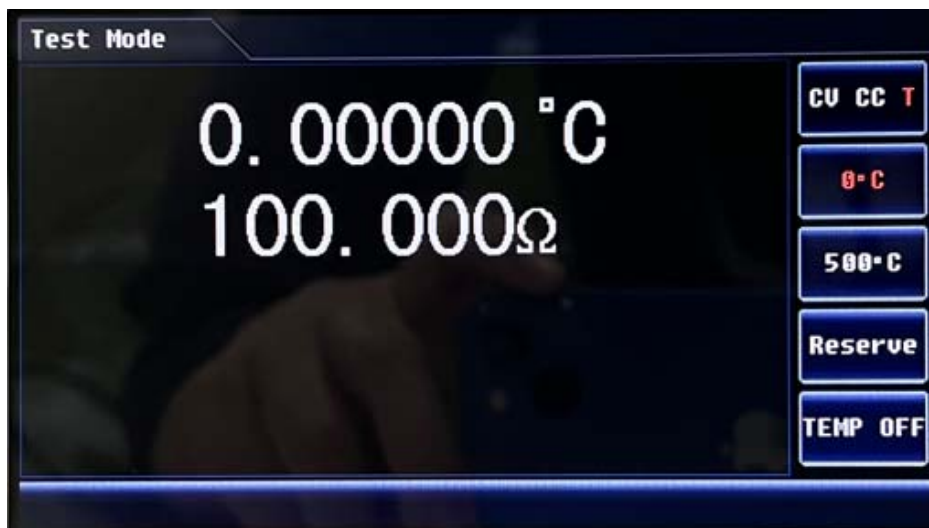
- (1) CV CCT function select key, able to select constant voltage mode, constant current mode and temperature electric resistance calibration.
- (2) CV-AUTO constant voltage mode gear selection.
- (3) CC_AUTO constant current mode gear selection.
- (4) SLOW test speed selection.
- (5) ON output start or close.

2. Parameters setting:

- (1) LO More lower value.
- (2) HI More higher value.
- (3) Output voltage setting.
- (4) Output current setting.

3. Temperature calibration output

Shown as picture 2-4



Picture 2-4

- (1) $0^{\circ}\text{C}/100\Omega$ temperature electric resistance output.
- (2) $500^{\circ}\text{C}/280.977\Omega$ temperature electric resistance output.



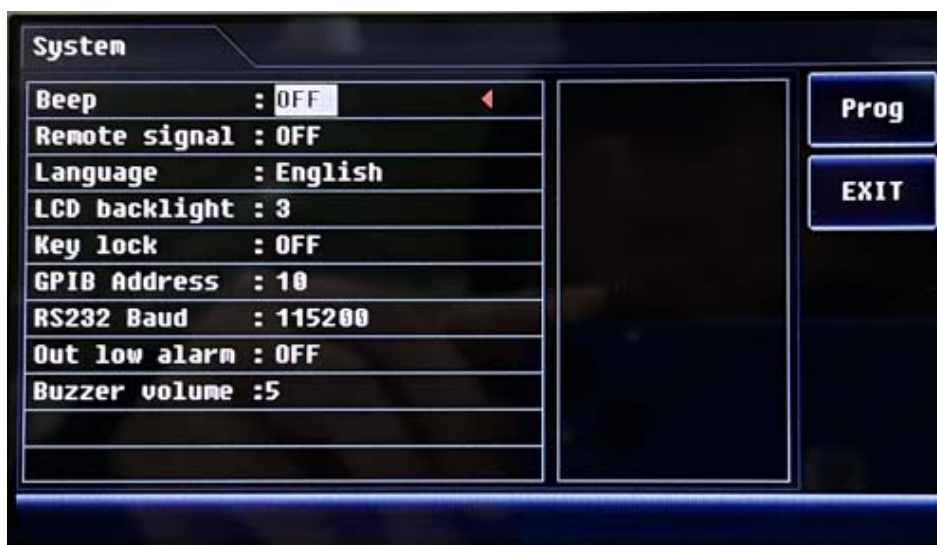
(3) Reserve Obligate.

(4) TEMP OFF temperature electric resistance close.



III System setting

Press [System] soft key on homepage of instrument and enter into the system setting page, shown as picture 2-5, able to up and down move cursor to shift different setting items through the up and down direction keys on panel, the left and right direction keys on keyboard able to circling shift the parameters in the setting items. At the same time, the [Prog] soft key and Enter key on the page have the same function.



Picture 2-5 System setting

3.1 Beep

Able to select good, bad and close. The buzzer will alarm according to the corresponding selection when measuring.

3.2 Remote signal

Able to select open and close, 3 pieces external signal, Testing, Pass and Fail. Output the corresponding signal according to the test value.

3.3 Language

English and simplify Chinese.

3.4 LCD backlight

Select 1 8 grades.



3.5 Key lock

Able to lock the key when testing

3.6 GPIB address

Able to select 1-30.

3.7 RS232 Baud

9600, 19200 and 38400 optional.

3.8 Lower output alarm

Able to select open and close, the buzzer will alarm when measured voltage bigger or less than 0.2% of the setting value at CV mode, CC mode is same.

3.9 Buzzer volume

Volume setting



IV Communication and orders

The instrument standard configured RS232 communication port, able to remote control the instrument through computer and other controllers, and output various data, able to install GPIB communication module to obtain more high efficiency communication speed. The instrument automatically enter into communication mode after received the orders of computer, the task information column at bottom of homepage will display “LOCAL” reminding information. Now all other keys of keyboard will be locked except the LOCAL key, press LOCAL key then can cancel lock.

4.1 Joggle specification

■ RS232

Please connect the communication cable to RS232 joggle when remote control the instrument through computer.

Specification:Electric specification:Accordance with EIA-232(RS232) standard

Communication cable:Cross wires

Baud rate:	9600, 19200, 38400
Initial position:	1bit
Stop position:	1bit
Data byte length:	8bit
Check byte:	No
Used code:	ISO(ASCII)

■ GPIB

The relate specification of GPIB joggles shown as the below table:

Specification:Electric specification:Accordance with IEEE 488-1978 standard

Used code:	ISO(ASCII)
Address:	1-30



4.2 Orders

<u>Order</u>	<u>Function</u>
*IDN?	Machine information
:SYST:OUT:ALAR s	Whether output alarm open (ON/OFF)
:SYST:KEY:LOCK s	Whether key lock open (ON/OFF)
:SYST:REM:SIGN s	Whether external control signal open (ON/OFF)
:SYST:BEEP s	Buzzer alarm setting (PASS/FAIL/OFF)
:SYST:OUT:ALAR?	Read output alarm
:SYST:KEY:LOCK?	Read the keyboard lock
:SYST:REM:SIGN?	Read external control signal
:SYST:BEEP?	Read buzzer alarm setting
:CONF:SPEED s	Speed setting (MAX/FAST/MED/SLOW)
:CONF:FUNC s	Parameter setting (DCC/DCV/TEMP)
:CONF:OUT x,x	Voltage (unit: V/mV), current (unit: A/mA/uA) output, voltage at front, current at back, separate by “,”
:CONF:DCC x	CC mode output current (unit: A/mA/uA)
:CONF:DCV x	CV mode output voltage (unit: V/mV)
:CONF:TEMP x	Calibrate temperature electric resistance 0/1/2/3/4(0=close suspending; 1=100Ω; 2=280.977Ω)
:DCC:OUT s	DCC output open or close (ON/OFF)
:CONF:DCC 0/1/2/3x	CC mode output current (0=automatic, unit: A/mA/uA)
:CONF:DCV 0/1/2/3/4x	CV mode output voltage (0=automatic, unit: V/mV)



:CONF:SPEED?	Read speed setting
:CONF:FUNC?	Read parameter setting
:CONF:OUT?	Read output setting
:CONF:DCC?	Read current setting
:CONF:DCV?	Read voltage setting
:CONF:TEMP?	Read temperature calibrating electric resistance
:DCC:OUT?	Read output status
:MEAS:TRIG?	Read voltage and current at the same time, voltage (unit:V), current (unit: A), voltage at front, current at back, separate by “;”)
:MEAS:CURRE?	Read CC current (unit A)
:MEAS:VOLT?	Read CV voltage (unit V)