User's Manual

DP6000 Series

Cable Harness Tester

<u>2023-04-06</u> Manual version V2.0

FOREWORD	5
CHECKING PACKAGE CONTENTS	5
SAFETY NOTES	6
INSTALLATION ENVIRONMENT	8
CHAPTER 1 OVERVIEW	10
 1.1 Brief Introduction 1.2 Performance Features 1.3 Names and Functions of Parts 1.4 Dimensions 	11 11
CHAPTER 2 PREPARING FOR MEASUREMENT	16
2.1 Test Process Preview2.2 Inspection Before Testing2.3 Connection Preparation Before Testing	17 18
CHAPTER 3 CALIBRATION AND METROLOGY FUNCTION	N19
 3.1 TEST MODE SETTINGS 3.2 DC RES-DC RESISTANCE TEST 3.3 LCR TEST 3.4 INSUL RES-INSULATION RESISTANCE TEST 3.5 AC VOLT-AC HIPOT VOLTAGE 3.6 DC VOLT-DC HIPOT VOLTAGE 3.7 OS RES-ON-RESISTANCE TEST 3.8 ESD (DIODE HIPOT TEST) ON THE ESD (DIODE HIPOT TEST) TEST PAGE, USE THE NUMBER ENTER THE VOLTAGE VALUE. 	21 22 24 24 24 25 25 8 KEYS TO 25
Voltage: 1-80V	25
3.9 POINT- FIND A POINT	-
CHAPTER 4 SOFTWARE SETUP	27
4.1 System Function Items Introduction	

4.3 CREATE A NEW PROJECT 31 4.4 LOAD A PROJECT 31 4.5 PROJECT MANAGEMENT 32 4.5.1 Point Information 33 4.5.2 Self-learning Information 34 4.5.3 NTC Temperature Resistance Table 36 4.5.4 Test Diagram 37 4.5.5 Test File Group 39 4.6 SYSTEM SETTINGS 56 4.7 SYSTEM SELF-TEST 64 4.8 TEST MODE 65 4.9 FIND POINT 66 4.10 MULTIMETER 67 4.11 DATA QUERY 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 82 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS 86 6.2 ACCURACY 88		4.2 LOGIN TO SYSTEM	. 30
4.5 PROJECT MANAGEMENT 32 4.5.1 Point Information 33 4.5.2 Self-learning Information 34 4.5.3 NTC Temperature Resistance Table 36 4.5.4 Test Diagram 37 4.5.5 Test File Group 39 4.6 SYSTEM SETTINGS 56 4.7 SYSTEM SELF-TEST 64 4.8 TEST MODE 65 4.9 FIND POINT 66 4.10 MULTIMETER 67 4.11 DATA QUERY 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86		4.3 CREATE A NEW PROJECT	.31
4.5.1 Point Information 33 4.5.2 Self-learning Information 34 4.5.3 NTC Temperature Resistance Table 36 4.5.4 Test Diagram 37 4.5.5 Test File Group 39 4.6 System Settings 56 4.7 System Settings 56 4.7 System Settings 56 4.7 System Setf-test 64 4.8 Test Mode 65 4.9 Find Point 66 4.10 Multimeter 67 4.11 Data query 80 4.12 User Management 80 4.13 Change Password 82 CHAPTER 5 EXT I/O PORT (HANDLER) 83 5.2 PORT Signal Connection Method 85 CHAPTER 6 PARAMETERS 86		4.4 LOAD A PROJECT	. 31
4.5.2 Self-learning Information 34 4.5.3 NTC Temperature Resistance Table 36 4.5.3 NTC Temperature Resistance Table 36 4.5.4 Test Diagram 37 4.5.5 Test File Group 39 4.6 SYSTEM SETTINGS 56 4.7 SYSTEM SELF-TEST 64 4.8 TEST MODE 65 4.9 FIND POINT 66 4.10 MULTIMETER 67 4.11 DATA QUERY 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS		4.5 PROJECT MANAGEMENT	. 32
4.5.3 NTC Temperature Resistance Table 36 4.5.4 Test Diagram 37 4.5.5 Test File Group 39 4.6 SYSTEM SETTINGS 56 4.7 SYSTEM SELF-TEST 64 4.8 TEST MODE 65 4.9 FIND POINT 66 4.10 MULTIMETER 67 4.11 DATA QUERY 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS 86		4.5.1 Point Information	.33
4.5.4 Test Diagram. 37 4.5.5 Test File Group. 39 4.6 SYSTEM SETTINGS 56 4.7 SYSTEM SELF-TEST. 64 4.8 TEST MODE. 65 4.9 FIND POINT 66 4.10 MULTIMETER. 67 4.11 DATA QUERY. 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD. 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS 86		4.5.2 Self-learning Information	.34
4.5.5 Test File Group 39 4.6 SYSTEM SETTINGS 56 4.7 SYSTEM SELF-TEST 64 4.8 TEST MODE 65 4.9 FIND POINT 66 4.10 MULTIMETER 67 4.11 DATA QUERY 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS 86		4.5.3 NTC Temperature Resistance Table	.36
4.6 SYSTEM SETTINGS 56 4.7 SYSTEM SELF-TEST 64 4.8 TEST MODE 65 4.9 FIND POINT 66 4.10 MULTIMETER 67 4.11 DATA QUERY 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 82 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS 86		4.5.4 Test Diagram	.37
4.7 SYSTEM SELF-TEST. 64 4.8 TEST MODE. 65 4.9 FIND POINT 66 4.10 MULTIMETER. 67 4.11 DATA QUERY. 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 82 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS		4.5.5 Test File Group	.39
4.8 TEST MODE. 65 4.9 FIND POINT 66 4.10 MULTIMETER. 67 4.11 DATA QUERY. 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS		4.6 System Settings	. 56
4.9 FIND POINT 66 4.10 MULTIMETER 67 4.11 DATA QUERY 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS		4.7 System Self-test	.64
4.10 MULTIMETER. 67 4.11 DATA QUERY. 80 4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 82 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS		4.8 TEST MODE	. 65
4.11 DATA QUERY		4.9 FIND POINT	.66
4.12 USER MANAGEMENT 80 4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 82 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS 86		4.10 MULTIMETER	. 67
4.13 CHANGE PASSWORD 82 CHAPTER 5 EXT I/O PORT (HANDLER) 82 5.1 EXT I/O PORTS AND SIGNALS 83 5.2 PORT SIGNAL CONNECTION METHOD 85 CHAPTER 6 PARAMETERS 86 6.1 BASIC PARAMETERS 86		4.11 DATA QUERY	. 80
CHAPTER 5 EXT I/O PORT (HANDLER)		4.12 USER MANAGEMENT	. 80
5.1 EXT I/O PORTS AND SIGNALS		4.13 CHANGE PASSWORD	. 82
5.1 EXT I/O PORTS AND SIGNALS			
5.2 Port Signal Connection Method	С	CHAPTER 5 EXT I/O PORT (HANDLER)	.82
5.2 Port Signal Connection Method		5.1 EXT I/O PORTS AND SIGNALS	83
CHAPTER 6 PARAMETERS			
6.1 BASIC PARAMETERS			
	С	CHAPTER 6 PARAMETERS	.86
6.2 Accuracy		6.1 BASIC PARAMETERS	. 86
		6.2 ACCURACY	. 88

Foreword

Thank you for purchasing the "DP6000 Series Wire Harness Tester". To obtain maximum performance from this product, please read this manual first, and keep it handy for future reference.

Registered trademarks

Windows and Excel are registered trademarks of Microsoft Corporation in the United States or other countries.

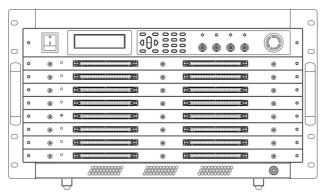
Checking Package Contents

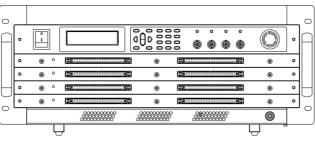
When receiving instrument, please check carefully to ensure that the instrument is not damaged during transit. In addition, special inspections of accessories, panel switches and connectors are required. If the instrument is found to be damaged or it fails to operate as described in the user manual, please contact us.

To transport this instrument, use the original packaging and wrap it in a double carton. Damage during transit is not covered by the warranty.

Check the	package	contents	as	follows:
-----------	---------	----------	----	----------

	Item	Quantity
1	DP6000 Wire Harness Tester	1
2	Power cord	1
3	User Manual	1
4	Patrol electric pen	1
5	Network cable	1
6	Certificate of conformance	1





DP6000S

Safety Notes

The instrument is designed to conform to IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, using the instrument in a way not described in this manual may negate the provided safety features.

Before using the instrument, be certain to carefully read the following safety notes.

Note

Mishandling during use could result in injury or death, as well as damage to the instrument. Be certain that you understand the instructions and precautions in the manual before use.

Notation

This manual contains information and warnings essential for safe operation of the instrument and for maintaining it in safe operating condition. Before using the instrument, be certain to carefully read the following safety notes.

> Indicates very important message in this manual. When the symbol is printed on the instrument, refer to a corresponding

topic in the Instruction Manual.



---- Indicates DC (direct current)



Indicates a fuse

Indicates earth terminal

In this manual, the risk seriousness and the hazard levels are classified as follows.



Indicates an imminently hazardous situation that

will result in death or serious injury to the operator.



Indicates a potentially hazardous situation that

will result in death or serious injury to the operator.



Indicates a potentially hazardous situation that

may result in minor or moderate injury to the operator or

damage to the instrument or malfunction.



Indicates functions of the instrument or relative

suggestion of a correct operation.

Accuracy

We define measurement tolerances in terms of f.s. (full scale), rdg. (reading) and dgt. (digit) values, with the following meanings:

f.s.	(Maximum display value)		
	This is usually the maximum display value. In the instrument, this indicates the		
	currently used range.		
rdg.	(Reading or displayed value)		
	The value currently being measured and indicated on the measuring instrument.		
dgt.	(Resolution)		
	The smallest displayable unit on a digital measuring instrument, i.e., the input value		
	that causes the digital display to show a "1".		

Usage Notes

Installation environment

- Operating temperature and humidity ranges
 0°C to 40°C 80%RH or less (no condensation)
- Storage temperature and humidity ranges
 23 ±5°C 80%RH or less (no condensation)

Installing the instrument in inappropriate locations may cause a malfunction of instrument or may give rise to an accident. Avoid the following locations.

- ♦ Exposed to direct sunlight or high temperature
- ♦ Exposed to corrosive or combustible gases
- ♦ Exposed to water, oil, chemicals, or solvents
- ♦ Exposed to high humidity or condensation
- ♦ Exposed to a strong electromagnetic field or electrostatic charge

- ♦ Exposed to high quantities of dust particles
- Near induction heating systems (such as high-frequency induction Heating systems)
- ♦ Susceptible to vibration

Checking before use

Before using the instrument the first time, verify that it operates normally to ensure that no damage occurred during storage or shipping. If you find any damage, contact your authorized Hopetech distributor or reseller.

	Before using the instrument, check that the coating of the
	test leads or cables are neither ripped nor torn and that no
	metal parts are exposed. Using the instrument under such
conditions could result in ele	conditions could result in electrocution. Contact your
	authorized Hopetech distributor or reseller in this case

Handling Precautions

	Do not modify, disassemble, or repair the instrument. This may result in fire, electric shock accident, or injury.	
	Do not place the instrument on an unstable or slanted surface. Itmay drop or fall, causing injury or instrument failure.	
	To avoid corrosion and/or damage to the instrument due to battery leakage, remove the batteries from the instrument if it is to be kept in storage for an extended period. Be sure to turn the power off after using it.	
DANGER To avoid electric shock accident and short circuit, please op the instrument as following: Do not test the voltage over 60 VDC		
	Do not test the terminal-to-ground voltage over 70 VDC. Do not test AC voltage. Be sure to connect the test lead correctly.	
	Wear gloves of rubber or similar materials during measurement.	

Ensure sufficient ventilation when testing batteries in the
measurement room to prevent explosions. Sparks may occur
when the test leads are connected to batteries, which can ignite
any accumulated inflammable gases such as hydrogen.

Handling leads and cables

When using the instrument, use only the test line 9363-B or test leads specified by our company.To avoid damaging the cables, do not bend or pull the base of cables and the leads.The ends of pin type leads are sharp. Be careful to avoid injury.
To avoid damage to the test leads, when plug/pull the test line, don't hold the cable but connector.

Chapter 1 Overview

DP6000 series cable harness integrated tester offers rapid inspection of wire and cable harnesses. It can accurately detect the open circuit, short circuit and dislocation in cable harness, helping users to quickly detect problems in the wiring harness. Combined with the supporting upper computer software, DP6000 cable tester can visually display the problems in the wiring harness.

DP6000 cable harness integrated tester is used in the automatic testing of cables and harness in automobiles, flexible circuit boards, etc.

DP6000 distributed cable tester can be built as a distributed test system. Up to 20000 test points can be expandable through the extension interface. It can be used for aircraft, trains, satellites, and other wiring harness testing.

1.1 Brief Introduction

DP6000 cable harness integrated tester has 32/64/128/256 test points. The

tester supports both the inner four-wire and outer four-wire hybrid test method. The device has the following test functions: fast OS test, accurate OS test, two-wire resistance test, four-wire DC on-resistance test, four-wire LCR test, insulation resistance test, AC/DC hipot test and diodes test.

1.2 Performance Features

Distributed

The distributed system with 20000 maximum test points possible.

Modular

Each tester built-in 1 test card and 8 switch array cards. Each switch array card has 128 test points and supports 2-wire and 4-wire mixed testing while users don't need to change the wiring method.

Multifunctional test

The test board integrates OS test, DC resistance test, LCR test, AC/DC insulation withstand voltage test, insulation resistance test and programmable power function

High accurate on-resistance

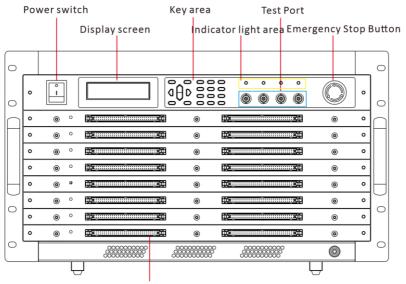
The on-resistance test provides a maximum test current of 1A, with a minimum resistance resolution of $10\mu\Omega$.

Self-learning function to quickly detect the connection relationship of unknown wiring harnesses

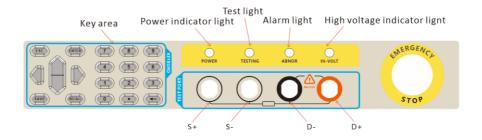
1.3 Names and Functions of Parts

Each DP6000 cable harness integrated tester consists of a test card and a switch array card, the number of switch array cards can be selected (up to 8 cards), the test card and the switch array card are plugged into the mother card. One test box has 256 test points, which can be used in combination or alone.

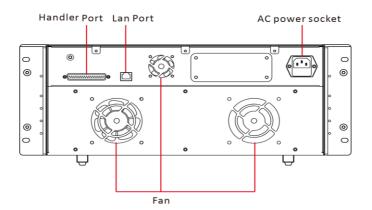
Front Panel



Switch Array Card

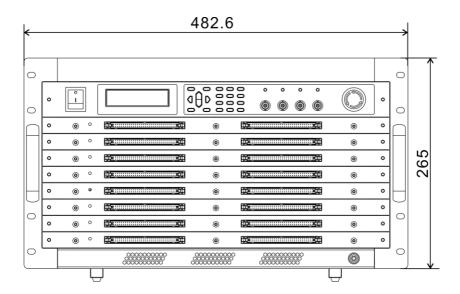


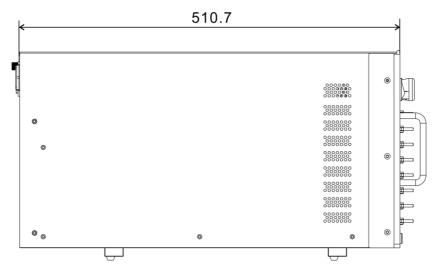
Rear Panel

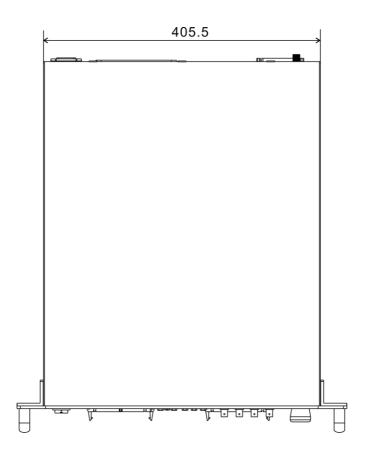


1.4 Dimensions

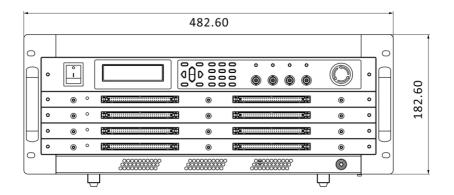
6000 chassis size (more than 256 points)

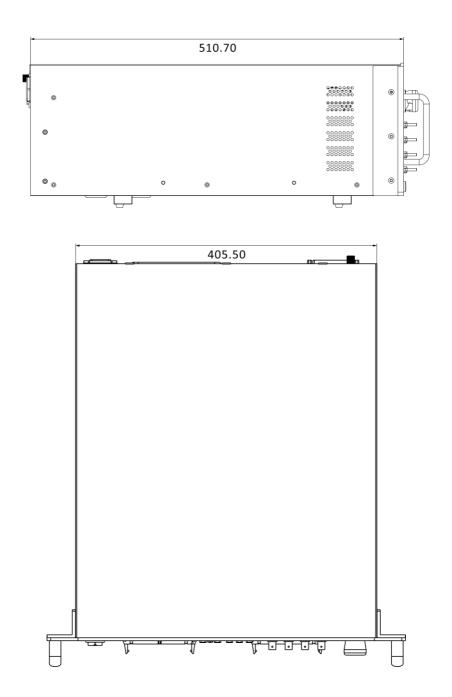






6000S chassis size (256 points and below)



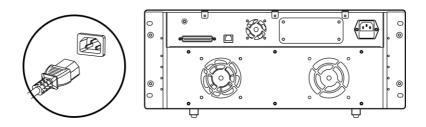


Chapter 2 Preparing for Measurement

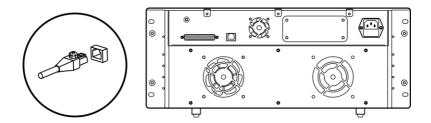
2.1 Test Process Preview

Keep the tester in the power off state and prepare for the test according to the following steps.

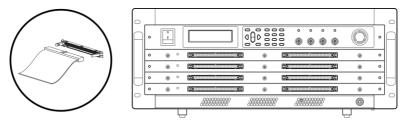
1. Plug in the power cord



2. Turn off the power of the tester and connect it to the computer through the network cable

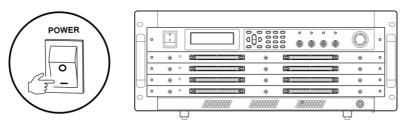


3. Wire the cables/harness to test

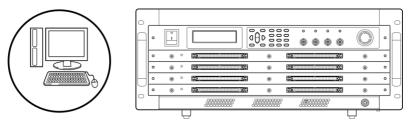


4. Turning the power on

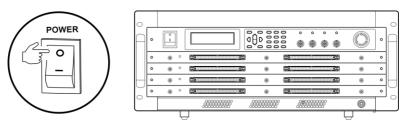
Press the [POWER] key in the front panel to on-state



5. Open the software on the computer to set parameters, start test



6. Turn off the power at the end of the test



2.2 Inspection Before Testing

Before use, please confirm that there are no faults caused by storage and transportation, and check and confirm the operation before use. If you confirm that there is a fault, please contact our sales office.

Inspection items	Processing method
Is this instrument damaged or	Do not use it when there is
cracked?	damage, please send back for
Is the internal circuit exposed?	repair.

Is there any garbage such as	If it is attached, wipe it off with a
metal pieces attached to the	cotton swab, etc.
terminal?	
Is there any coating of the test	In the case of damage, it may
leads or cables neither ripped nor	cause instability or errors in the
	measured values. If so, replace it
torn and no metal parts exposed	with a new one

Confirmation when power is turned on

Inspection items	Processing method
After the power switch on the instrument panel is turned on, is the screen all lit up when the power is turned on, and is the measurement screen displayed	If the display is different, it may be a failure inside this tester, please send it for repair.
normally?	

2.3 Connection Preparation Before Testing

• The end of test cable is sharp, be careful not
to be scratched
• For safety reasons, the test cable shall be
used specified by our factory.
• To avoid electric shock accident, be sure to
connect the test lead correctly.

Preparation

- 1. Connect the tester and computer through the network cable
- 2. Connect the tester and the harness under test through the test cable
- 3. Turn on the power of the tester and computer
- 4. Do the test setup through software side in PC
- 5. Start testing through software



* Precautions

1. Excessive humidity in the testing environment will greatly affect the insulation test results of the tester.

2. It is recommended to use test cables (cables) with good insulation/withstand voltage rating

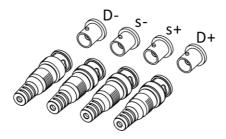
3. During the test, the test port will generate high voltage, please pay attention to safety

Chapter 3 Calibration and Metrology Function

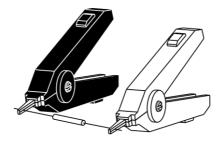
In order to facilitate the calibration and metrology of DP6000 cable tester, it has a metering port on the panel that can be used to connect to test standard, while a menu interface is provided for operation. Please read this chapter in detail for specific operations

Preparation before test

1. Front panel wiring



2. Testing the measured object



3.1 Test Mode Settings

Press the **[RECALL]** key on the test page to switch to the **MODE** page, use the up and down keys to select the test mode, press the [ENTER] key to confirm, and back to the test page.



10. IP

The test modes are:

DC RES-DC resistance

LCR

INSUL RES- insulation resistance

AC VOLT- AC hipot voltage

DC VOLT-DC hipot voltage

OS RES-on-resistance

ESD-diode hipot test

POINT- Find a Point

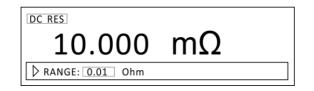
VERSION- system version information

IP- IP Address

3.2 DC RES-DC Resistance Test

On the DC RES (DC resistance) test page, use the up and down keys to set the range: 0.01Ω , 0.1Ω , 1Ω , $1\Omega\Omega$, $10\Omega\Omega$, $1k\Omega$, $10k\Omega$, $100k\Omega$.





3.3 LCR Test

On the LCR test page, use the left and right keys to select the item, and use the up and down keys to select the range, frequency, test item and test level. Range: 100Ω , $1k\Omega$, $10k\Omega$, $100k\Omega$, AUT;

Frequency: 50Hz,60Hz,100Hz,120Hz,1kHz,10kHz,50kHz;

Test items: R,C,L,RX;

Test level: 0.3V,1.0V.













LCR	
10.000	mS
RANGE: 100 FREQ	: 50 MODE: Y LV: 1.0

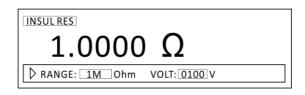


3.4 INSUL RES-Insulation Resistance Test

On the **INSUL RES** (insulation resistance) test page, use the left and right keys to select the item, use the up and down keys to select the range, and use the number keys to enter the voltage value.

Range: $1M\Omega$, $10M\Omega$, $100M\Omega$, $1G\Omega$;

Voltage: 30-2000V.



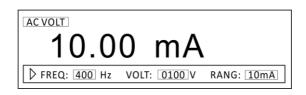
3.5 AC VOLT-AC Hipot Voltage

On the AC **VOLT** (AC hipot voltage) test page, use the left and right keys to select the item, use the up and down keys to select the frequency, range, and use the number keys to enter the voltage value.

Frequency: 50Hz,60Hz,400Hz;

Voltage: 30-2000V;

Range: 10mA.



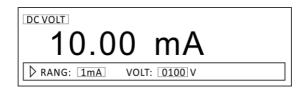
3.6 DC VOLT-DC Hipot Voltage

On the **DC VOLT** (DC hipot voltage) test page, use the left and right keys to select the item, use the up and down keys to select the range, and use the

number keys to enter the voltage value.

Range: 1mA,5mA;

Voltage: 30-3000V;



3.7 OS RES-On-resistance Test

Accurate OS on-resistance test page.

OS RES		
1.0000	MΩ	

3.8 ESD (Diode Hipot Test)

On the ESD (diode hipot test) test page, use the number keys to enter the voltage value.

Voltage: 1-80V

ESD			
010.0	V		
VOLT: 010 V			

3.9 POINT- Find a Point

With the support of a point patrol pen, while a point is selected, the **POINT** (find a point) interface will display the information of the current point.





3.10 VERSION- System Version Information

Open the **VERSION** page to view the version information of the tester.

PANNEL	1.3.5		
MATHER	01.18		
MEAS	3.25		
CHANNEL	2.17		

VERSION			
PANEL	1.3.7		
MATHER	01.20		
MEAS	2.28		
CHANEL	2.19		

3.11 IP- IP Address

Open to view the tester IP address on Windows.

IP SET		
▶ IP	192.168.001.100	

```
IP SET
```

```
▶ IP 192.168.001.100
```

Press the **[ENTER]** key to confirm the IP setting and the following interface will appear, then restart the device to enable the new IP address.

IP SET	
▶ IP	192.168.001.100
PLEA	ASE RESTART

Chapter 4 Software Setup

DP6000 series cable harness comprehensive tester realizes the measurement and switch array switching function. The main test project management, parameter setting and other functions are mainly realized by the host computer software.

Program installation

The DP6000 host computer control software is installation-free, users can directly copy the software folder to the directory you need to install. In the program directory, find the *Low Voltage Cable Test System* program file and double-click to run the software.

Name	Date modified	Туре	Size
HPLicence.all	2/7/2021 4:11 PM	Application extension	197 KB
HPLicence.dll.config	11/6/2020 2:29 PM	CONFIG File	1 KB
HPLicence.pdb	2/25/2022 8:22 AM	PDB File	56 KB
ICSharpCode.SharpZipLib.dll	11/21/2020 11:52 PM	Application extension	198 KB
ICSharpCode.SharpZipLib.pdb	11/21/2020 11:52 PM	PDB File	100 KB
ICSharpCode.SharpZipLib.xml	11/21/2020 11:52 PM	XML Document	559 KB
🛸 log4net.dll	10/19/2020 6:40 AM	Application extension	264 KB
log4net.xml	10/19/2020 6:40 AM	XML Document	1,512 KB
LoginUserList.resx	4/21/2023 10:27 AM	RESX File	6 KB
Low Voltage Cable Test System.exe	4/25/2023 2:14 PM	Application	9,491 KB
Low Voltage Cable Test System.exe.config	4/25/2023 3:14 PM	CONFIG File	8 KB
Low Voltage Cable Test System.pdb	4/25/2023 2:14 PM	PDB File	3,170 KB
Mono.CSharp.dll	12/9/2015 9:58 PM	Application extension	1,218 KB
MySql.Data.dll	7/10/2019 3:08 PM	Application extension	398 KB
MvSal.Data.Entitv.EF6.dll	7/10/2019 3:08 PM	Application extension	384 KB

4.1 System Function Items Introduction

Before using the software, you can roughly understand the functions of the software through the following function table

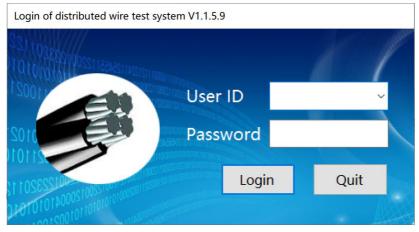
Feature items	Detailed description
1.Project	According to the different customer projects,
management features	500 kinds of setting items can be managed
	separately.
1.1 Create a new	Create a new project.
project	
1.2 Load the	Before testing, first load the existing project.
project	
1.3Project	According to the needs of customers,
Management	configure test items and test parameters.
2. Network	You can configure multiple test segments,
segment	each using different test parameters.
management	
2.1Network	Users can freely divide network segments
segment	such as OS test, insulation test, and withstand
management	voltage test, which is convenient for various
	flexible tests.
2.2Test side	Users can name the test points for easy
naming	management.
3. System	
function module	
3.1 System	Check whether the system is functioning
self-test	properly.
3.2 Find	According to the user's selection, the point
something	information is displayed.
3.3Multimeter	According to the user's choice, various tests
function	are quickly carried out to facilitate debugging.
3.4Self-learning	The system automatically learns the
function	conduction network in the current connection,
	and automatically sets the network table and

	insulation table.
3.5Reporting	Language reporting function.
function	
4. Test	
functionality	
4.1 Low voltage	According to the configuration in the network
test	table, the low-voltage items are tested one by
	one, and the test resistance value is displayed.
4.2 Insulation	According to the configuration in the insulation
test	table, insulation tests are performed one by
	one to show the insulation resistance. Users
	can choose to perform tests precisely, quickly,
	or customized.
4.3Withstand	According to the configuration in the insulation
voltage test	table, the withstand voltage test is carried out
	one by one to display the leakage current
	value. Users can choose to perform tests
	precisely, quickly, or customized.
5. Data saving	
and query function	
5.1 Data report	Each time the test is completed, the data
export	report will be printed, the report format can be
	report will be printed, the report format can be
	report will be printed, the report format can be defined, and the PDF and WORD formats can
export	report will be printed, the report format can be defined, and the PDF and WORD formats can be printed.
export 5.2 Database	report will be printed, the report format can be defined, and the PDF and WORD formats can be printed. Each time the test completes, the data is saved to the database. Users can query historical data in the
export 5.2 Database Saving	report will be printed, the report format can be defined, and the PDF and WORD formats can be printed. Each time the test completes, the data is saved to the database.
export 5.2 Database Saving 5.3 Database	report will be printed, the report format can be defined, and the PDF and WORD formats can be printed. Each time the test completes, the data is saved to the database. Users can query historical data in the
export 5.2 Database Saving 5.3 Database Query	report will be printed, the report format can be defined, and the PDF and WORD formats can be printed. Each time the test completes, the data is saved to the database. Users can query historical data in the database and print data reports.
export 5.2 Database Saving 5.3 Database Query 6. Barcode	report will be printed, the report format can be defined, and the PDF and WORD formats can be printed. Each time the test completes, the data is saved to the database. Users can query historical data in the database and print data reports. According to the product, the barcode can be
export 5.2 Database Saving 5.3 Database Query 6. Barcode printing function	report will be printed, the report format can be defined, and the PDF and WORD formats can be printed. Each time the test completes, the data is saved to the database. Users can query historical data in the database and print data reports. According to the product, the barcode can be customized and printed. The system supports three levels of user management, namely administrator,
export 5.2 Database Saving 5.3 Database Query 6. Barcode printing function 7. User	report will be printed, the report format can be defined, and the PDF and WORD formats can be printed. Each time the test completes, the data is saved to the database. Users can query historical data in the database and print data reports. According to the product, the barcode can be customized and printed. The system supports three levels of user

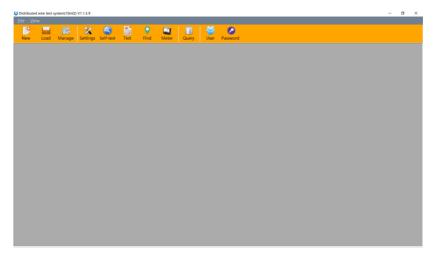
can configure and manage the project; The
operator can only load the project and test.

4.2 Login to System

Once the program is running, a login page pops up.



On the login page, select or enter the **[User ID]** admin and **[Password]** 123456 (initial password), click the [Login] button, wait for the system to initialize, and enter the main interface.



4.3 Create a New Project

 Distributed 	l wire test s	ystem(10mΩ)	V1.1.5.9							
<u>F</u> ile <u>V</u> ie										
New	Load	Manage	X Settings	Q Self-test	هي Test	Meter	Query	Ser User	Password	

Click [New], then the interface will pop up Create a New Project dialog box.

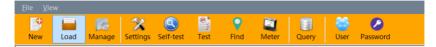
🔵 Create a new proje	ect			×
	Create	Ca	ancel	

- 1. Enter a project name, such as "Demo"
- 2. Click the [Create] button to create

Engineering Information	tion	
Project Name	Demo	Save
Model		
Creator	管理员	Delete
Create Time	2023-04-19 08:32:38	
Reviser	管理员	
Modification Time	2023-04-19 08:32:38	
Remarks		

3. Create successfully

4.4 Load a Project



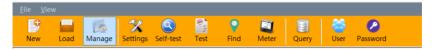
Click **[Load]** to enter the loading project page, select the project name to be loaded, and click **[Load]** to load the existing project.

🔘 Se	lect project	_		×
Retrie	val			
	Project Name			
۶.	Demo			
			_	
	Load	Cance	l i	

Load successfully

Engineering Informat	ion	
Project Name	Demo	Save
Model		
Creator	管理员	Delete
Create Time	2023-04-19 08:32:38	
Reviser	管理员	
Modification Time	2023-04-19 08:32:38	
Remarks		

4.5 Project Management



Click **[Manage]** to enter the project management page, display the current project information.

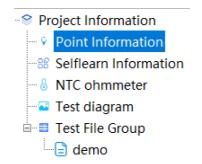
■ Section	Engineering Informa	tion	
 Point Information 	Project Name	Demo	Save
	Model		
Test diagram	Creator	管理员	Delete
🖃 🗏 Test File Group	Create Time	2023-04-19 08:32:38	
demo	Reviser	管理员	
	Modification Time	2023-04-19 08:32:38	
	Remarks		

In the project information, you can modify the project name, model, and remarks. Click **[Save]** on the right side to save after editing.

Click [Delete] and select [Yes] to delete the current project.

Warn	\times
Are you sure you want to delete the project 【Demo】?	
Yes <u>N</u> o	

4.5.1 Point Information



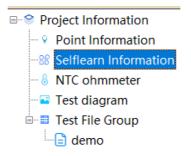
Click [**Point Information**] under the directory of [**Project Information**] to open the point information interface.

01#BOX ^	Internal points	Internal point name	Custom name	
#TestCard	1	01-01-001		
2#TestCard	2	01-01-002		
3#TestCard	3	01-01-003		
#TestCard #TestCard	4	01-01-004		
#TestCard	5	01-01-005		
#TestCard	6	01-01-006		
#TestCard	7	01-01-007		
02#BOX	8	01-01-008		
	9	01-01-009		
1#TestCard 2#TestCard	10	01-01-010		
3#TestCard	11	01-01-011		
#TestCard	12	01-01-012		
#TestCard	13	01-01-013		
6#TestCard	14	01-01-014		
7#TestCard	15	01-01-015		
B#TestCard	16	01-01-016		
03#BOX	17	01-01-017		
1#TestCard	18	01-01-018		
2#TestCard	19	01-01-019		
8#TestCard	20	01-01-020		
##TestCard	21	01-01-021		
5#TestCard 5#TestCard	22	01-01-022		
#TestCard	23	01-01-023		
#TestCard	24	01-01-024		
	25	01-01-025		
04#BOX #TestCard	25	01-01-025		

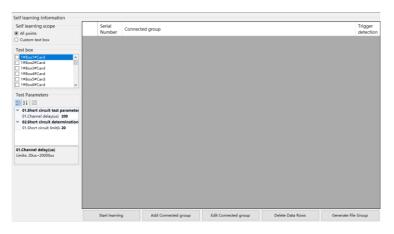
Point information shows 01#, 02#, 03#... 20# box, internal points are 1-20480, internal point name: box+test card+card point, and the custom name can be entered by the user.

You can click [Import] or [Export]. The data format is in .csv file.

4.5.2 Self-learning Information



Click **[Selflearn Information]** under the directory of **[Project Information]** to open the self-learning information interface.



Select self-learning range: all points or custom test box;

Set test parameters: channel delay 20us-20000us, short circuit lower limiting value $2k\Omega$ -1100k Ω .

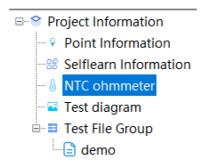
Click [Start Learning] to start learning.

After learning, the connection group information will be displayed. Trigger detection can be checked on the right side of the connection group, as the condition of [Enable Contact Detection]. [Enable Contact Detection] is set in the [Test Parameter Setting] interface of [System Setting].

Click [Generate File Group] to select the test table to create.

Select the test table to	create		\times
⊠ OS	🗹 Open	☑ Short	
✓ Two wire	Four wire	⊡ IR	
⊡ DCW	ACW	☑ LCR	
Create a second One2All	line resistor O Serial O All		
Upper limit(Ω) 0		
[ОК		

4.5.3 NTC Temperature Resistance Table



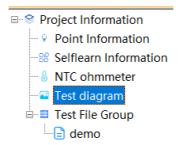
Click **[NTC ohmmeter]** under the directory of **[Project Information]** to open the NTC thermistor R/T comparison table and customize the NTC temperature resistance table.

TC	Thermistor R/T Corr	Quick Table Creation			
	Serial Number	Temperature value(°C)	Upper limit of resistance(kΩ)	Lower limit of resistance(kΩ)	 Start Temperature(low temperature)
	1	0	0	0	0
	2	0.5	0	0	End Temperature(high temperature
	3	1	0	0	50
	4	1.5	0	0	Temperature Interval(°C)
	5	2	0	0	0.5
	6	2.5	0	0	Create
	7	3	0	0	create
	8	3.5	0	0	Comparison Table Index
	9	4	0	0	1
	10	4.5	0	0	
	11	5	0	0	Save
	12	5.5	0	0	Sure
	13	6	0	0	Import
	14	6.5	0	0	
	15	7	0	0	Export
	16	7.5	0	0	
	17	8	0	0	
	18	8.5	0	0	
	19	9	0	0	
	20	9.5	0	0	
	21	10	0	0	
	22	10.5	0	0	
	23	11	0	0	
	24	11.5	0	0	
	25	12	0	0	
	26	12.5	0	0	
	27	13	0	0	

Enter the start temperature, end temperature and temperature interval, then click **[Create]** to quickly create a table.

Enter the upper and lower limit resistance value, click **[Save]** on the right to save the data. The resistance values corresponding the upper and lower resistance limits must be complete and there must be no missing temperature values.

Click **[Export]** to export the saved NTC temperature resistance meter data, and click **[Import]** to import the saved data file.



Click **[Test diagram]** under the directory of **[Project Information]** to open the test diagram.

t diagram				
Add a joint	Create a joint	Joint hotspot	Internal points	Joint name
Delete joint	Save diagram			Number of joint hotspots
	Delete diagram			FindPoint

You can click [Add a joint], [Delete joint], [Reset joint], [Create a joint], [Save diagram] or [Delete diagram] under the test diagram interface

Click [Add a joint] to add the saved connector picture

After selecting the connector, click [Delete joint] to delete the selected connector

Click [Reset joint] to reset the direction of the selected connector

Click [Save diagram] to save the set diagram

Click [Delete diagram] to delete the current diagram

diagram		2		
	Create a joint	Joint hotspot	Internal points	Joint name
Add a joint	cicute a joint			
		2	66	Number of joint hotspots
Delete joint Reset joint				Number of joint hotspots

Click [Create a joint] to pop up the following add connector dialog box.

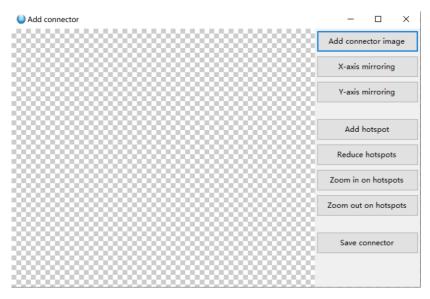
click [Add connector image] to select the connector picture to be added

Click **[X-axis mirroring]** or **[Y-axis mirroring]** to rotate the X or Y axis of the connector picture

Click **[Add hotspot]** to add the hotspots according to requirements; Click **[Reduce hotspots]** to reduce the hotspots according to requirements

Click [Zoom in on hotspots] or [Zoom out on hotspots] to enlarge or reduce the hotspot

After the setting is completed, click **[Save Connector]** to save the connector file



The saved test diagram can visually display the test results in the **[Image Mode]** of the **[Test Mode]** interface. Red wiring indicates that the current hot spot connection test has not passed.

				2/000
	. N I I I I I I I I I I I I I I I I I I	• // 📖		3 4
		20		
				\mathcal{N}
		Interferenced	- Internal and at	Joint name
Add a joint	Create a joint	Joint hotspot	Internal points	Joint name
		1	Internal points 65 66	Joint name Number of joint hotspots
Add a joint Delete joint			65	

4.5.5 Test File Group

Click [Test File Group] under the directory of [Project Information] to open

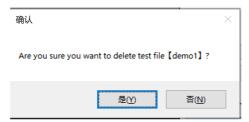
the test file group interface.

Test File Group					
Test file name	demo				Add
		Test file name		Pause after completion	Modify
	•	demo			
Test File Group					Create a unilateral file UP DOWN Delete
	fter the	test group pauses, outpu	it IO results		

Enter the name of the test file and click the **[Add]** button to add to the test file group;

Select the test file name in the test file group, enter a new name in the test file name above, and click **[Modify]** to change a new name;

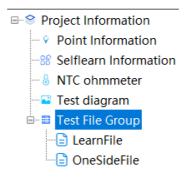
Select the name of the test file in the test file group, click **[Up]** or **[Down]** to switch the name order, click **[Delete]** button to delete the selected test file group, the interface will pop up a confirmation dialog box, and click **[Yes]** to confirm the deletion.



Click [Create a unilateral file], the following dialog box will pop up, select the start point and the end point, click [Add] to test points, click [Create] to create a unilateral test group.

Create a unilateral test project	×
Te st p oi nt s	
Start 1 + End 1 + Add Clear	

Click the Test file in the **Test Files Group** in the left column to open the test file page.



The test file page includes: test project, testing parameters and test group, test points;

The test project includes [Add], [Delete], [Up] and [Down];

Set the parameters of the test project in the testing parameters;

You can **[Add]**, **[Modify]** and **[Delete]** the connected groups in the test groups and test points interface, or click **[Export]** to export the data or **[Import]** to bring data in your template.

				LearnFile									
			Testing Parameters				up, Test						
001	OS test [OS test]	V	2↓ □ 01.Four wire NTC test parameters	Serial	Name		Tested object				Standa parts	Standa parts	Stand parts
002	Short test [Short test]	V	O1.NTC resistance type 100K O2.Judgment mode Temperature d	Numbe						SP	DP	DN	SN
003	Open test [Open test]		03.Test speed Fast 04.Channel delay(ms) 5 05.Temperature sampli 0										
004	Two wire LCR test [Two wire LCR test]		06.Temperature channe 0 > 07.Enable intra group < No										
005	Two wire res test [Two wire res test]		08.Maximum allowable 0 • 02.Temperature determination param										
006	NTC test [NTC test]		O1.Comparison mode Temperature d O2.B parameter 3950 O3.Allowable temperata 3										
007	Four wire NTC test [Four wire NTC test]		O4Lipper temperature 0 OBLER temperature 0 OBLER temperature 0 OBLER temperature 0 OBLER temperature 0 OBER tables por 00.75mmperature source Ambient temp. 0 00.0000 0 00000000000000000000000000000000000										
Add	Delete Up	Down	01.Comparison mode Temperature difference, temperature value	Add	Modify	,	Delete	_	Im	port	_	Export	

Click the **[Add]** button below the test project, the interface will pop up the add test project dialog box;

le Add Test Project					
Name					
Туре	OS test		~		
	Add	Cancel			

Enter the project name and select the project type: OS test, short test, open test, two-wire DC resistance test, two-wire LCR test, four-wire DC resistance test, four-wire LCR test, NTC test, four-wire NTC test, insulation test, AC withstand voltage test, DC withstand voltage test, diode regulator test, spot check test, instantaneous short circuit test, four-wire point test, multi-point LCR and ambient temperature.

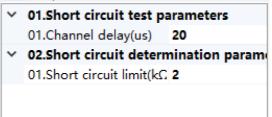
Ambient temperature OS test Short test Open test Two wire res test Two wire LCR test Four wire res test Four wire LCR test NTC test Four wire NTC test Insulation test AC withstand voltage test DC withstand voltage test Diode regulator test Spot check test Instantaneous short circuit test Four wire point test Multilateral LCR Ambient temperature

Click the **[Add]** button to add the project to test one by one according to the needs;

001	Ambient temperature		^
001	[Ambient temperature]		
002	OS test	М	
002	[OS test]	×	
003	Short test	М	
005	[Short test]		
004	Open test	М	
004	[Open test]		
0.05	Two wire res test		
005	[Two wire res test]		
000	Two wire LCR test	М	
006	[Two wire LCR test]		
007	Four wire res test		
007	[Four wire res test]		
	Four wire LCR test		
800	[Four wire LCR test]		
	NTC test		
009	[NTC test]		
	Four wire NTC test		
010	[Four wire NTC test]		
011	Insulation test		
011	[Insulation test]		
010	AC withstand voltage test		
012	[AC withstand voltage		
013	DC withstand voltage test		~
		141	

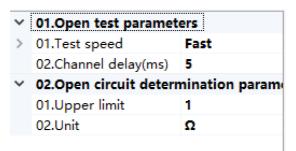
1. OS test and short test parameters

Channel delay: 5mS- 200mS Short circuit lower limit: 2kΩ - 200kΩ



2. Open test parameters

Test speed: fast, medium, slow Channel delay: 5mS - 200mSUpper limit: $1\Omega - 1000k\Omega$ Unit: Ω , $k\Omega$



3. Two wire resistance test parameters

Test range: $10m\Omega, 100m\Omega, 1\Omega, 10\Omega, 100\Omega, 1k\Omega, 10k\Omega, 100k\Omega$ Test speed: fast, medium, slow Channel delay: 0mS - 200mSBase deduction: No, Yes Correction value: - $\infty \rightarrow +\infty$ Upper limit, lower limit **01.Two wire resistance test paramete**

1	~	01.Two wire resistance	e test parametei
	>	01.Test range	10Ω
	>	02.Test speed	Fast
		03.Channel delay(ms)	10
	>	04.Base deduction	No
		05.Correction value(Ω)	0
	~	02.Determination para	ameters of two-
		01.Upper limit	0
		02.Lower limit	0
		03.Unit	Ω

4. Two wire LCR parameters

```
Test range: 100\Omega, 1k\Omega, 10k\Omega, 100k\Omega
Automatic range: on, off
```

Test frequency: 50Hz,60Hz,100Hz,120Hz,1kHz,10kHz

Test speed: fast, medium, slow

Test type: resistance, capacitance, inductance, impedance, admittance,

conductance

Test level: 1.0V,0.3V,0.1V

Base deduction: No, Yes

Channel delay: 5mS - 200mS

Upper limit value, lower limit value, unit

01.Two wire LCR para	meters
01.Test range	100Ω
02.Automatic range	On
03.Test frequency	1kHz
04.Test speed	Fast
05.Test type	Capacitance
06.Test level	1.0V
07.Base deduction	No
07.Channel delay(ms)	5
02.Two wire LCR dete	rmination paran
01.Upper limit value	0
02.Lower limit value	0
03.Unit	pF
	01.Test range 02.Automatic range 03.Test frequency 04.Test speed 05.Test type 06.Test level 07.Base deduction 07.Channel delay(ms) 02.Two wire LCR dete 01.Upper limit value 02.Lower limit value

5. Four wire resistance test parameters

Test range: $10m\Omega, 100m\Omega, 1\Omega, 10\Omega, 100\Omega, 1k\Omega, 10k\Omega, 100k\Omega$ Test speed: fast, medium, slow Channel delay: 5mS - 200mSOVC function: No, Yes Base deduction: No, Yes Enable intra group difference: No, Yes Enable within-group differential comparison: resistance values in the same test group for difference comparison Corrected value: - ∞ + ∞

maximum allowable difference, upper limit, lower limit, unit

~	01.Four wire resistance	e test paramete
>	01.Test range	100mΩ ~
>	02.Test speed	Fast
	03.Channel delay(ms)	5
>	04.OVC function	No
>	05.Base deduction	No
	06.Correction value(Ω)	0
>	07.Enable intra group (No
	08.Maximum allowable	0
$\mathbf{\tilde{v}}$	02.Four wire resistance	e determinatior
	01.Upper limit	0
	02.Lower limit	0
	03.Unit	mΩ

The four-wire DC resistance range corresponds to the current value

The corresponding current value of the four-wire DC resistance range			
Range	Current Value		
10mΩ	1A		
100mΩ	1A		
1Ω	100mA		
10Ω	10mA		
100Ω	1mA		
<u>1</u> ΚΩ	1mA		
10ΚΩ	100uA		
100KΩ	10uA		

6. Four wire LCR parameters

Test range:100 Ω ,1k Ω ,10k Ω ,100k Ω ;

Automatic range: on, off;

Test frequency: 50Hz,60Hz,100Hz,120Hz,1kHz,10kHz;

Test speed: fast, medium, slow;

Test type: resistance, capacitance, inductance, impedance, admittance,

conductance;

Test level: 1.0V,0.3V,0.1V;

Channel delay: 5mS-200mS;

Base deduction: No, Yes;

Upper limit value, lower limit value, unit.

¥	01.Four wire LCR para	meters
>	01.Test range	100Ω
>	02.Automatic range	On
>	03.Test frequency	1kHz
>	04.Test speed	Fast
>	05.Test type	Capacitance
>	06.Test level	1.0V
	07.Channel delay(ms)	5
>	08.Base deduction	No
~	02.Four wire LCR dete	rmination parar
	01.Upper limit value	0
	02.Lower limit value	0
	03.Unit	pF
1		

7. NTC test or four wire NTC test parameters

NTC resistance type: 10K,100K

Judgment mode: temperature determination, resistance determination and comparative judgment

Test speed: fast, medium, slow

Channel delay: 5ms - 200ms

Temperature sampling channel

Temperature channel correction value

Enable intra group difference: No, Yes

Maximum allowable difference: a judgment condition setting for intra-group

difference comparison

Comparison mode: temperature difference, temperature value

B parameter

Allowable temperature difference(used with the temperature difference in the comparison mode)

Upper temperature limit

Lower temperature limit(used with the temperature value in the comparison mode)

RT table type: standard, custom (need to enter the NTC resistance table

for project management to create)

Temperature source comparison: ambient temperature (generally read directly by USB port temperature probe), standard part temperature (standard part temperature is generally read by temperature sampling channel)

Displays the original temperature(the initial temperature of the test piece): No, Yes

Upper limit of resistance; lower resistance limit

Resistance automatic: No, Yes

Resistance automatic temperature difference; maximum resistance

difference

Displays original value: No, Yes

~	01.NTC test parameter	'S
>	01.NTC resistance type	100K
>	02.Judgment mode	Temperature d
>	03.Test speed	Fast
	04.Channel delay(ms)	5
	05.Temperature sampli	0
	06.Temperature channe	0
>	07.Enable intra group (No
	08.Maximum allowable	0
\sim	02.Temperature deterr	nination param
>	01.Comparison mode	Temperature d
	02.B parameter	3950
	03.Allowable temperati	3
	04.Upper temperature	0
	05.Lower temperature	0
>	06.RT table type	Standard
>	07.Temperature source	Ambient temp
>	08.Displays the original	No
$\mathbf{\tilde{v}}$	03.Resistance determine	nation paramet
	01.Upper limit of resist	0
	02.Lower resistance lim	0
>	03.Resistance automati	No
	04.Resistance automati	2
~	04.Comparison determ	nination parame
	01.Maximum resistance	0
>	02.Display original valu	No

8. Insulation resistance parameters

Test card selection: test card 1, test card 2, etc Test method: one to all, dichotomy fast Test range: $1M\Omega$, $10M\Omega$, $100M\Omega$, $1G\Omega$ Test voltage: 30-2000VBoost time: 0.01S - 10SDelay time: 0.0S - 99STest time: 0.1S - 500SDepressurization time: 0.01s - 10sTest result types: res, current Test voltage, upper limit of resistance value, lower limit of resistance value,

upper limit of leakage current, lower limit of leakage current

¥	01.Insulation test sett	ing
	01.Test card selection	158 159 160
>	02.Test method	One to all
\mathbf{v}	02.Insulation resistant	e parameters
>	01.Test range	1MΩ
	02.Test voltage(v)	100
	03.Boost time(s)	0.2
	04.Delay Time(s)	0.5
	05.Test time(s)	0.5
	06.Depressurization tin	0.1
>	07.Test result type	Res
$\mathbf{\tilde{v}}$	03.Determination para	ameters of insul
	01.Upper limit of resist	0
	02.Lower limit of resista	0
$\mathbf{\mathbf{v}}$	04.Leakage current de	termination par
	01.Upper limit of leaka	0
	02.Lower limit of leaka	0

9. AC withstand voltage parameters

Test card selection: test card 1, test card 2, etc; Test method: one to all, dichotomy fast Test frequency: 50Hz,60Hz,400Hz Test voltage: 30-2000V Test range: 1mA,5mA Boost time: 0.01S – 10S Delay time: 0.0S – 99S Test time: 0.1S – 500S Drop time: 0.01S-10SArc sense: 0-7Correction value: $-\infty \rightarrow +\infty$ Base deduction: No, Yes

Test voltage, test compensation, upper limit, lower limit

¥	01.Voltage withstand	test setting
	01.Test card selection	1 2 3 4 5 6 7
>	02.Test method	One to all
¥	02.AC withstand volta	ge parameters
>	01.Test frequency	50Hz
≻	02.Test range	1mA
	03.Test voltage(v)	100
	04.Boost time(s)	0.2
	05.Delay Time(s)	0.5
	06.Test time(s)	0.5
	07.Drop time(s)	0.1
	08.Arc Sense	2
	09.Test compensation(0
>	10.Base deduction	No
¥	03.AC withstand volta	ge judgment p
	01.Upper limit(mA)	5
	02.Lower limit(mA)	0

10. DC withstand voltage parameters

Test card selection: test card 1,test card 2, etc Test method: one to all, dichotomy fast Test range: 1mA,5mA Test voltage: 30-2000VBoost time: 0.01S - 10SDelay time: 0.0S - 99STest time: 0.1S - 500SDrop time: 0.01S - 10SArc sense: 0 - 7Base deduction: No, Yes Correction value: $-\infty + \infty$ Test voltage, test compensation, upper limit, lower limit

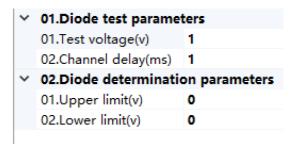
×	01.Withstand voltage	test card
	01.Test card selection	1 2 3 4 5 6 7 8
\geq	02.Test method	One to all
~	02.DC withstand volta	ge parameters
>	01.Test range	1mA
	02.Test voltage(v)	100
	03.Boost time(s)	0.2
	04.Delay Time(s)	0.5
	05.Test Time(s)	0.5
	06.Drop time(s)	0.1
	07.Arc Sense	5
	08.Test compensation(I	0
>	09.Base deduction	No
\mathbf{v}	03.DC withstand volta	ge judgment pa
	01.Upper limit(mA)	5
	02.Lower limit(mA)	0

Arc sensitivity comparison table

Arc detection sensitivity	Detection peak current
setting	value
Level 7	5.5mApeak
Level 6	7.7mApeak
Level 5	10mApeak
Level 4	12mApeak
Level 3	14mApeak
Level 2	16mApeak
Level 1	20mApeak

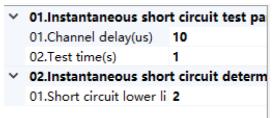
11. Diode regulator parameters

Test voltage: 1V – 10V Channel delay: 0mS – 200mS Upper limit, lower limit



13. Instantaneous short circuit test parameters

 $\label{eq:channel_delay: 5uS-2000uS} Test time: 0.1S-20.0S \\ Short circuit lower limit: 2k\Omega-1000k\Omega \\ \end{tabular}$



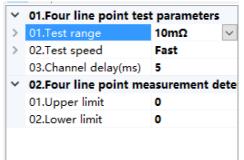
14. Four-wire point test parameters

Test range:10m Ω ,100m Ω ,1 Ω ,10 Ω ,100 Ω ,1k Ω ,10k Ω ,100k Ω

Test speed: fast, medium, slow

Channel delay: 5ms - 200ms

Upper limit, lower limit



15. Multipoint LCR parameters

Test range: $100\Omega, 1k\Omega, 10k\Omega, 100k\Omega$ Automatic range: on, off Test frequency: 50Hz, 60Hz, 100Hz, 120Hz, 1kHz, 10kHzTest speed: fast, medium, slow Test type: resistance, capacitance, inductance, impedance, admittance, conductance Test level: 1.0V, 0.3V, 0.1VChannel delay: 5mS - 200mSBase deduction: No, Yes Upper limit value, lower limit value, unit

¥	01.Multipoint LCR par	ameters
>	01.Test range	100Ω 🗸 🗸
>	02.Automatic range	On
>	03.Test frequency	1kHz
>	04.Test speed	Fast
>	05.Test type	Capacitance
>	06.Test level	1.0V
	07.Channel delay(ms)	5
>	08.Base deduction	No
\sim	02.Multipoint LCR det	ermination para
	01.Upper limit value	0
	02.Lower limit value	0
	03.Unit	pF

16. Ambient temperature determination

As needed, add the corresponding number of channels and their channel numbers, and then set the upper and lower temperature limit ranges (Note: In this test project, you need to set the parameters in advance and enable them in the temperature channel settings set by the system), as shown in the figure below

		1
¥	01.Ambient temperature determination	Numb
	01.Upper temperature 0	
	02.Lower temperature 0	
	Set up a testing group	×
	Test group name	
	Sample channel	~
	O K Cancel	

17. Introduction to high voltage/insulation test methods

A. One-to-other: This is the most basic test method of high-voltage insulation test, its action is to connect the point A to be measured to high voltage and other points to ground, observe its leakage current or insulation value, and then connect the point B to be measured to high voltage and other points to ground, observe its leakage current or insulation value, and so on, connect each point to be measured to high voltage and other points to ground, observe its leakage current or insulation value, and so on, connect each point to be measured to high voltage and other points to ground, observe its leakage current or insulation value, so that it can be confirmed that the test of high voltage insulation at all points to be measured is no problem, and the number of tests is N times (as shown in the figure below). This test method can accurately find out the insulation and leakage current values at each point, but the disadvantage is that the test speed is slow.

	Α	В	C	D	E	F	G	Н
Step 1	+		-	-	Ĵ	2 0- 19	ł	4
Step 2	3 .	+	-	1000		-	100	-
Step 3	l.	<u> 19</u>	+	<u>111</u>		<u>8-</u> 6	3	
Step 4	85	N 	-	+		37-32	10000	
Step 5	100	3 <u>8 (</u> 8	2	100	+	<u> 19 - 1</u> 9	100	-8
Step 6	1		-		((<u> </u>	+	-	-
Step 7	I	s 	-	4234	8	-	+	-
Step 8	10-10	2 <u>1</u> 2		<u>1970</u>	32	-	100 <u>100 1</u> 00	+

B. Rapid dichotomy method: This mode is similar to the rapid classification method, such as 8 test points such as B C D E F G H and so on, when using the test for each line or point, it must be measured 7 times in sequence to distinguish whether the DUT is a good product, but using the rapid dichotomy

test method, the first time A B C D and E F G H are tested in two piles, the second time A B E F and C D G H are tested in two piles, and the third time A C E G and B D F H are divided into two piles of tests, This only requires three tests to determine whether the analyte is good, and if the analyte has 128 points, use the pair of lines or The point test must be tested 128 times, and the rapid method test only needs 7 times (as shown below), the disadvantage is that the wrong point cannot be known, and the line segment impedance will be slightly lower than the actual value due to the parallel test of the line segment.

	Α	В	С	D	E	F	G	Н
Step 1	+	+	+	+				
Step 2	+	+	-	100	+	+		
Step 3	+	10 <u></u> 15	+		+	3 <u>97</u> 52	+	

4.6 System Settings



Click **[Settings]** to open the system settings interface, the system settings include: test box and test channel, test parameter setting, file saving settings,code scanning gun setting, temperature channel setting, LCR port reset, IO port test, interprocess communication, plug in management, firmware update, OS calibration, control card debugging and leakage current self-test.



Click **[Test box and test Channel]** to switch to the test box and test channel settings page.



The test box and test channel setting page can select the number of test boxes and test cards, enter the starting IP address and select the network card. The starting IP address is the IP address of the 01# test box, and the network card selects the network card model of the computer.

	Total	ng test 20	480	Star	ting IP 1	92.168.1.	100	Seleo	ct network			~
01#BOX	Number of	8 ÷	Number	of 1024	starti	ng 1	End po	int 1024		IP	192.168.1.100	Not
		+ 01 Ø	+ 02	+ 03 Ø	‡ 04 Ø	++05 🕜	+06 🕜	+€07 🔘	+08 0			
02#BOX	Number of	8 ÷	Number	of 1024	starti	ng 1025	End po	int 2048		IP	192.168.1.101	Not
		ŧ01 🖗	+t02 🕜	≠03 (0	 ≢04 @	- ‡05 🕜	 ‡06 🕜	₩07 	₩80			
03#BOX	Number of	8	Number	of 1024	starti	ng <mark>2049</mark>	End po	int 3072		IP	192.168.1.102	Not
		+€01 🔘	+02 🕜	 ‡03 Ø	 ‡04 🕜	- †05 🕜	-₹06 🕜	+€07 🔘	+08 🔘			
04#BOX	Number of	8 .	Number	of 1024	starti	ng <mark>3073</mark>	End po	int 4096		IP	192.168.1.103	Not
		+01 ∅	+02 🕜	+ 03 Ø	 ŧ04	+05 Ø	+06 🕜	 ŧ07 🔘	+08 @			
05#BOX	Number of	8 🛟	Number	of 1024	starti	ng <mark>4097</mark>	End po	int 5120		IP	192.168.1.104	Not
		, ŧ01 🞯	+02 🕜	, €03 🕜	+€04 🕜	- †05 🕜	-≑06 🕜	+€07 🔘	-≑08 🚱			
06#BOX	Number of	8 ÷	Number	of 1024	starti	ng <mark>5121</mark>	End po	int 6144		IP	192.168.1.105	Not
		+ 01 Ø	+02 🕜	+ 03 Ø	 ŧ04 @	+€05 🕜	+06 0	† 07 🔘	+08 🔘			
07#BOX	Number of	8 .	Number	of 1024	starti	ng <mark>6145</mark>	End po	int 7168		IP	192.168.1.106	Not
		, ŧ01 🞯	+02 🕜	-‡ 03 Ø	-≢04 @	+05 🕜	- ‡06 🕜	+€07 🔘	+08 🔘			
08#BOX	Number of	8	Number	of 1024	starti	ng <mark>7169</mark>	End po	int 8192		IP	192.168.1.107	Not
		+ 01	+02 🕜	‡ 03 🕜	+ 04 🕜	+05 🕜	+06 🕜	+07 🔘	+08 🔘			
09#BOX	Number of	8 :	Number	of 1024	starti	ng <mark>8193</mark>	End po	int 9216		IP	192.168.1.108	Not
		ŧ01 Ø	÷02 🕜	₩03 (0	† 04 Ø	+05 Ø	+06 @	† 07 🙆	₩80			
10#ROX	Number of	8 -	Number	of 1024	starti	ng 0217	Ending	int 1024	0	ID	192 168 1 109	Not

Click [Test parameter setting] to switch to the test parameter setting page;

Set parameter mode: single trigger, cycle trigger, optional to stop the test when the test fails

Test results broadcast: PASS (pass), FALL (fail)

Machine name: define the machine as needed

Enable contact detection: After enabling the DUT contact test card slot, it will be automatically detected

Enable trigger delay: delay time when using external triggering

Enable temperature compensation: fill in the compensation value according to the actual temperature and required temperature of the site

Enable alias function: After this function is selected, you need to define each point on the point learning page on the project management page

The binary test point has been group name to indicate the function:

Automatically clear statistics every other day: check this box to automatically clear the test statistics of the previous day

You can also choose the following function:

[Abnormal detection shall be carried out before four wire test] [OS test optimization] [OS null Point Test] [Code scanning start test]

[No code accident]

[Automatically clear barcode after test]

[Manual input]

[Duplicate code does not count]

[Duplicate code alarm]

[When the test fails, lock the system]

etc.

Test parameter setting
Test
Cycle Cycle time (s) 3 Cycle times 0 □ Stop on failure
At the end of the test,
Pass
Fail
Machine ID Machine Name
Enable contact detection Waiting 0
Enable trigger delay Walting
Enable temperature compensation Compensati
Automatically start after pause Waiting 0
Output signal
Abnormal detection shall be carried out before four wire test Correction threshold (mΩ) 0
OS test optimization OS null point test
Code scanning start test 🔹 No code accident 🔹 Automatically clear barcode after test 🔅 Manual input 🔅 Duplicate code does not count
Duplicate code alarm Single O Multi Multi IP
Enable alias feature Binary test points are represented by group name
When the test fails, lock the system
Automatically clear statistics the next day
Enable multi object simultaneous measurement Barcode separator

Enable multi object simultaneous measurement: check this function to test multiple analytes, which can be used in the test mode of the product number, as shown in the figure below.

	Barcode								
	ld	File	Product	Name	Point	Limit	Value	Result	
×.	1				OS连通组			\odot	
									WAIT
74	sgo Node Text						Baronda Test Details 180 data	Sustinia Section	WAIT
2.0						e e	Sardede Test Details BG data	Statistic Test Log	
	Name	e		WAIT					
									Start(<u>S</u>)

File save settings	
File type	CSV file PDF file Word file
	Excel single file Fixed file
File name	□ Project + □ Barcode + □ Result + □ Time
	Time 示例: yyyyMMddHHmmss
Save mode	□ Save only □ Same name
File path	Select
File template	Select

Click [File save settings] to switch to the file save settings page.

File type:. CSV, .PDF, .DOC

- Select the required file format according to the requirements, three formats including Excel, PDF and Word.The above three saving formats, will not save the test results in the same table;
- Select Excel single file, set the file name, and save the test results to the same Excel table;

File name: Project +Barcode +Rresult +Time

Select the name of the file to be displayed according to the on-site requirements, the timestamp format can be customized, for example "yyyyMMddHHmmss";

Save mode: save only, same name

Save mode: You can select save only and same name; If you select save only,

Save only: only the tests with qualified results is saved while the tests with failed results is not saved.

Same name: If the file name is the same, the same name overwrites File path: the final storage address of the file;

File template: you need to select the data report document from the location of the 5000 software and then select the Report.frx fixed format, if not selected, the file type will not be saved.

Click **[Code Scanning Gun Settings]** to switch to the code scanning gun settings page

Code scanning g	un setting						
Enable serial p	ort scanning gun						
Port number	~	Baud rate		~			
Check bit	~	Data bit		~	Stop bit		~
Trigger the coo	de scanning gun when	start 🗌 Af	fter triggering	the code scann	ing gun, Close	e after 0	÷ seconds
Trigger	ASCII code		Hex co	ode		Tri	igger test
Stop instruction	ASCII code		Hex co	ode		S	itop test
Enable barcode	e validity detection						
Barcode length	0 • Prev	riew					
Fixed data	Start bit 0	÷ Len	gth 0 🗘	Detection value	e		
Gray data	Start bit 0	÷ Len	gth 0 🗘	Detection value	e		

Check **the enable serial port scanning gun**: select **[Port number]**, [Baud rate], **[Check bit]**, [data bit], [stop bit], otherwise the communication will fail; Check **trigger the code scanning gun when starting the test** : you can set the shutdown time of the code scanning gun after triggering the code scanning gun, or you can select ASCII code or Hex code to set the trigger instruction and the stop instruction.

Check **enable barcode validity detection**: the barcode length is optional; The start bit and length of fixed data and grayscale data are optional, and the detection value can be defined;

Click **[Temperature channel setting]** to switch to the temperature channel setting page;

Temperature cha	nnel setting				
Enable temper	ature channel				
Serial port	~	Baud rate	~		
Check bit	~	Data bit	~	Stop bit	~
Temperature	0				
Current channel	0	Temperature		Read	

Check the **enable temperature channel**, select the Serial port, Baud rate, Check bit, Data bit, Stop bit of this device, connect the temperature test module for temperature test, or select the corresponding channel to view the real-time temperature; this setting parameter is used in conjunction with the ambient temperature in the test filegroup.

Click [LCR port reset] to switch to the LCR port reset setting page;

LCR port reset
Lew portreset
LCR test method: Two wire test Four wire test
Note: when selecting the two wire test, use 1 and 2 points; When selecting four wire test, use 1, 2, 3 and 4 points.
LCR clearing metl Open circuit Short circuit clearing
Start clearing

Select LCR test method: Two-wire test or four-wire test;

Select LCR clearing method: Open circuit clearing or short circuit clearing; Click the **[Start clearing]** button to start clearing.

Click **[IO port test]** to switch to the IO port status page; you can view the input and output status and the corresponding channel.

5										
roup										
Input 02	Input 03	Input 04	Input 05	Input 06	Input 07	Input 08				
\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc				
Stop	Continue	Pause								
Start Stop Continue Pause Image: Continue Image: Continue<										
	Unqualified	Pause	High Volt	Scan Ok						
	Stop	Input 02 Input 03 Input 02 Continue Stop Continue group Output 02 Output 03	Input 02 Input 03 Input 04 Continue Pause Stop Continue Pause group Output 02 Output 03 Output 04	Input 02 Input 03 Input 04 Input 05 Stop Continue Pause Control Pause Control Pause Control Pause Control Pause Control Contr	Input 02 Input 03 Input 04 Input 05 Input 06 Stop Continue Pause Content of	Input 02 Input 03 Input 04 Input 05 Input 06 Input 07 Stop Continue Pause Content of Continue Pause Content of Content o				

Click **[Interprocess communication]** to switch to the interprocess communication page;

Interprocess commu	nication (TCP, UDP)			
Enable interpr	ocess communication	Receive instruction	Return instruction	Return test data (JSON structure)
O TCP mode				
Local service	IP	Port		
UDP mode				
Local	IP	Port		
Remote	IP	Port		

There are TCP and UDP modes for interprocess communication. You can check [Enable interprocess communication],[Receive instruction],

[Return instruction] and [Return test data(JSON structure)].

In TCP mode, you need to fill in the IP address and port of the local service program. In UDP mode, you need to fill in the IP address and port of the local program and the remote program.

Click [Plug in management] to switch to the plug in management page;

Plug in management Print label plug-in	
Status Not loaded Enable plug-ins Reload Parameter	Plug in test Selec
Save report plugin	
Status Not loaded Enable plug-ins Reload Parameter Plug in path	Plug in test Selec
MES docking plug-in	
Status Not loaded Enable plug-ins Reload Parameter	Plug in test
Plug in path	Selec

Set and select the parameters and paths of the [Print label plug-in], **[Save report plug-in]** and **[MES docking plug-in]** (Note: the plug-in saves the format document, generally customized according to the on-site requirements), or you can perform the parameter format of each plug-in.

Firmware update, OS calibration, control card debugging, leakage current self-test can only be operated by debugging personnel by entering the passwords.



4.7 System Self-test

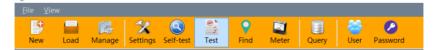
<u>F</u> ile <u>V</u> iew								
9 New	Load Manage	Settings	st Test	P Find	Meter	Query	User	Password

Click[Self-test] to pop up the system self-test dialog box.

System se	lf-test	_		×
Status		Box	All	~
				^
Result				
				~
Relation				
				\sim
	Start			

Click **[Start]** to wait for the self-test to complete, the self-test result will be displayed after the self-test is completed (Note: the machine cannot connect the test object during the self-test process, and an empty inspection is required).

4.8 Test Mode



Click [Test] to open the test mode page.

9 New	Load	Manage	X Settings	Self-test	e) Test	P Find	Meter	Query	e User	Password				
Barco	ode													
k	i	File		Product	t	Na	ame		Point		Limit	Value	Result	
		LearnFile		OS test		OS	B		OS连通组		2kΩ		\odot	
														WAIT
	Tant Red	-										Burends Text Sutsils 30 da		WAIT
		-										Barcode Text Details 30 da	ta Statistic Test Log	
	Name					1	VAIT							
														Start(S)

Click the [Start] button to start the test.

In the test, you can click the **[Pause/Resume]** button to pause or resume the test, or you can also click the **[Stop]** button to stop the test.

In the test mode, the fixture base can be cleared to zero, and right-click the mouse in the test line to see three ways: save LCR data as base, save withstand voltage data as base, and save low-resistance data as base. The three zeroing methods are used with the "Base Deduction" option in the corresponding test mode.

Right-click the test line and select **[Test Current Line]**, then the interface will pop up the following single-line test dialog box. Click **[Test]** to realize single-line test, and click **[Details]** to view detailed test results.

TestOnce	×
File group	LearnFile
Test project	OS test
Name	OS组
Points	OS Connected group
Values	Detail
Result	
	Test

4.9 Find Point

<u>F</u> ile <u>V</u> ie	w										
•											
New	Load	Manage	Settings	Self-test	Test	Find	Meter	Query	User	Password	

Click [Find] to pop up the find point dialog box.

Find Point		×
		^
Point		
		\sim
Name		
Alias		<
	Find	

Click the **[Find]** button in the interface, and use the find point pen to select the point you want to find. The interface will display the information of the current point and report the point by voice in real time.

The found point can be named directly in the alias area.

4.10 Multimeter

Oistributed wire test system(10mΩ) V1.1.6.0

Eile										
•			X		(گر) الل	9	Constant Multimeter		8	
New	Load	Manage	Settings	Self-test	Test	Find	Multimeter	Query	User	Passwo

Click [Multimeter] to pop up the multimeter test page.

Multimeter			-	\times
Test Type OS test ~				
Parameters 21 01.Short circuit test parameters 01.Channel delay(i 200 02.Short circuit determination parameters 01.Short circuit lim 20	Point1 (High volt 1 Point position Alias Point2 (Low volta 2	01-01-001		•
	Point position Alias	01-01-002		
01.Channel delay(us) Limits: 20us~20000us TEST Loop test				

Click the drop-down box on the right of **[Test Type]** to select the test type: OS test, short test, open test, two wire res test, two wire LCR test, four wire res test, four wire LCR test, NTC test, four wire NTC test, insulation test, AC withstand voltage test, DC withstand voltage test and diode regulator test. Set the corresponding test parameters in the test parameters box below after selecting the test type.

OS test	~
OS test	
Short test	
Open test	
Two wire res test	
Two wire LCR test	
Four wire res test	
Four wire LCR test	
NTC test	
Four wire NTC test	
Insulation test	
AC withstand voltage test	
DC withstand voltage test	
Diode regulator test	

1. OS test or short circuit test parameters

Channel delay: 5mS - 200mSShort circuit limit: $2k\Omega - 200k\Omega$

Multimeter			-	\times
Test Type OS test ~				
Parameters	Point1 (High volt	age / SP)		
✓ 01.Short circuit test param rs 01.Channel delay() 200 ✓ > ✓ 02.Short circuit determinat) parameter	1 Point position Alias	01-01-001		 •
01.Short circuit lin 20	Point2 (Low volta	ge / DP)		-
	Point position Alias	01-01-002		
01.Channel delay(us) Limits: 20us~20000us				
TEST Loop test				

2. Open test parameters

Test speed: fast, medium, slow

Channel delay: 5mS - 200mSUpper limit: $1\Omega - 1000k\Omega$

١	Multimeter				-	×
Te	st Type Open test	~				
	arameters		Point1 (High volt	age / SP)		
~	01.Open test parameter	rs	1			•
>	01.Test speed 02.Channel delay(ms) 02.Open circuit determi	Fast 20	Point position Alias	01-01-001		
	01.Upper limit	1	Point2 (Low volta	ge / DP)		
	02.Unit	Ω	2	90,00,		•
			Point position	01-01-002		
			Alias			
	Technood					
U	1.Test speed					
	TEST	Loop test				

3. Two wire DC resistance test parameters

Test range: $10m\Omega, 100m\Omega, 1\Omega, 10\Omega, 100\Omega, 1k\Omega, 10k\Omega, 100k\Omega$ Test speed: fast, medium, slow Channel delay: 0mS-200mSCorrection value: - ∞ + ∞

 Multimeter 					×
Test Type Two wire res tes	t ~				
Parameters		Point1 (High volt	age / SP)		
V 01.Two wire resistance V	test parameters	1			-
 > 01.Test range > 02.Test speed 	10mΩ Fast	Point position	01-01-001		
03.Channel delay(ms)	10	Alias			
05.Correction value(Ω)	0	Point2 (Low volta	ae / DP)		
		2	. .		-
		Point position	01-01-002		
		Alias			
01.Test range					
TEST	Loop test				

4. Two wire LCR parameters

Test range: 100Ω , $1k\Omega$, $10k\Omega$, $100k\Omega$

Automatic range: off, on

Test frequency: 50Hz,60Hz,100Hz,120Hz,1kHz,10kHz

Test speed: fast, medium, slow

Test type: resistance, capacitance, inductance, impedance, admittance,

conductance

Test level: 1.0V,0.3V,0.1V

Channel delay: 5mS - 20mS

Corretion value: -∞~+∞

 Multimeter 	-	
Test Type Two wire LCR test	~	
Parameters	Point1 (High voltage / SP)	
 01.Two wire LCR parameters 	1	* *
> 01.Test range 100Ω > 02.Automatic range Off	Point position 01-01-001	
> 03.Test frequency 50Hz		
> 04.Test speed Fast	Point2 (Low voltage / DP)	
> 05.Test type Resistance	2	-
> 06.Test level 1.0V 07.Channel delay(ms) 5	Point position 01-01-002	
	Alias	
01 Test same		
01.Test range		
TEST Loop te	est	

5. Four wire DC resistance test parameters

Test range: $10m\Omega, 100m\Omega, 1\Omega, 10\Omega, 100\Omega, 1k\Omega, 10k\Omega, 100k\Omega$ Test speed: fast, medium, slow Channel delay: 5mS - 200mSOVC function: no, yes Enable intra group difference comparison: no, yes Correction value: - ∞ ~+ ∞ . Maximum allowable difference

Multimeter			-	×
Test Type Four wire res test	~			
Parameters	Point1 (High volt	200 (SP)		
21 21		age / SF /		^
 O1.Four wire resistance test parameters 				•
> 01.Test range 10mΩ	Point position	01-01-001		
02.Test speed Fast 03.Channel delay(I 5	Alias			
> 04.0VC function No	Point2 (Low volta			
06.Correction valu 0	2	ige/DF)		•
> 07.Enable intra gr No	2			•
08.Maximum allov 0	Point position	01-01-002		
	Alias			
	Point3 (DN)			
	3			•
	Point position	01-01-003		
	Alias			
	Point4 (SN)			
01.Test range	4			•
	Point position	01-01-004		
TEST Loop test	Alias			

6. Four wire LCR parameters

Test range: 100Ω , $1k\Omega$, $10k\Omega$, $100k\Omega$

Automatic range: off, on

Test frequency: 50Hz,60Hz,100Hz,120Hz,1kHz,10kHz

Test speed: fast, medium, slow

Test type: resistance, capacitance, inductance, impedance, admittance,

conductance

Test level: 1.0V,0.3V,0.1V

Channel delay: 5mS - 200mS

 Multimeter 				-	\times
Test Type Four wire LCR test	~				
Parameters		Point1 (High volt	age / SP)		
 O1.Four wire LCR parameters 01.Test range 02.Automatic range 03.Test frequency 	100Ω Off 50Hz	1 Point position Alias	01-01-001		 •
 > 04.Test speed > 05.Test type > 06.Test level 07.Channel delay(ms) 	Fast Resistance 1.0V 5	Point2 (Low volta 2 Point position	ge / DP) 01-01-002		•
on tendinich denay (na)	-	Alias Point3 (DN) 3			
		Point position Alias	01-01-003		
01.Test range		Point4 (SN) 4 Point position	01-01-004		 •
TEST	Loop test	Alias			

7. NTC test parameters and four wire NTC test parameters

NTC resistance type: 10K,100K

Judgment mode: temperature determination, resistance determination and comparative judgment

Test speed: fast, medium, slow

Channel delay: 5mS - 200mS

Temperature sampling channel: you need to select the serial port number and corresponding parameters in the temperature channel setting set by the system;

Enable intra-group difference comparison: judge the difference between channels in the same test group;

Maximum allowable difference: a judgment condition setting for intra-group difference comparison;

Temperature determination parameters

Comparison mode: temperature difference, temperature value;

B parameter, upper temperature limit, lower temperature limit(used with the temperature value in the comparison mode);

RT table type: standard, custom(need to enter the NTC resistance table for project management to create).

Temperature judgment parameters

Comparison method:temperature value, temperature difference

B parameter

Allowable temperature difference: used with the temperature difference in the comparison mode

Temperature upper and lower limits: used with the temperature value in the comparison mode

RT table type: standard, custom.need to enter the NTC resistance table for project management to create

Temperature comparison source/ambient temperature:generally read directly by USB port temperature probe

Standard part temperature: is generally read by temperature sampling channel

Display the original temperature: the initial temperature of the oject under test

Resistance determination parameters

Upper limit of resistance

Lower limit of resistance

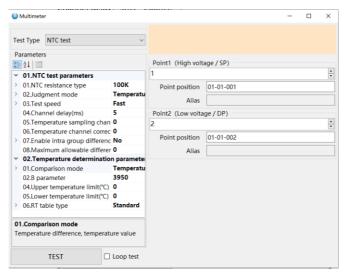
Automatic resistance value: yes, no

Automatic temperature difference of resistance value: parameters are called from RT table

Comparison determination parameters

Maximum resistance difference

Display of original values: yes, no



8. Insulation resistance parameters

1. Insulation test setting

Test card selection: test card 1, test card 2, test card 3, etc;

2. Insulation resistance parameters

Test range: $1M\Omega$, $10M\Omega$, $100M\Omega$, $1G\Omega$;

Test voltage;

Boost time: 0.01S - 10S;

Delay time: 0.0S - 99S;

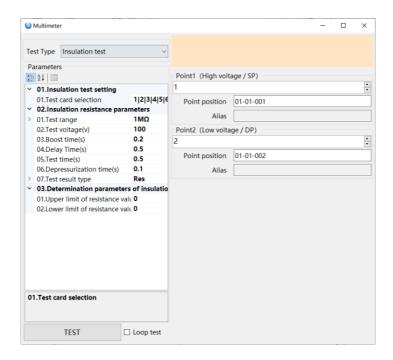
Test time: 0.1S - 500S;

Depressurization time: 0.01S - 10S;

Test result type: res, current;

3. Determination parameters of insulation

Upper limit of resistance value, lower limit of resistance value



8. AC withstand voltage parameters

1. Voltage withstand test setting

Test card selection: test card 1, test card 2, test card 3, etc;

2. AC withstand voltage parameters

Test frequency: 50Hz,60Hz,400Hz Test range: 1mA,5mA Test voltage Boost time: 0.01S – 10S Delay time: 0.0S – 99S Test time: 0.1S – 500S Drop time: 0.01S – 10S Arc sense: 0 – 7 Test compensation

3. AC withstand voltage judgment parameters

Test voltage and temperature compensation value

Upper limit, lower limit

0	Multimeter				-	×
Te	st Type AC withstand volta	ge test 🛛 🗸				
P	arameters					
	21		Point1 (High volt	age / SP)		
~	01.Voltage withstand test	setting	1			-
	01.Test card selection	1 2 3 4 5 6	Point position	01-01-001		
~	02.AC withstand voltage p	arameters				
>	01.Test frequency	50Hz	Alias			
>	02.Test range	1mA	Point2 (Low volta	ge / DP)		
	03.Test voltage(v)	100	2			-
	04.Boost time(s)	0.2		04.04.000		
	05.Delay Time(s)	0.5	Point position	01-01-002		
	06.Test time(s)	0.5	Alias			
	07.Drop time(s)	0.1				
	08.Arc Sense	2				
	09.Test compensation(mA)	0				
~	03.AC withstand voltage ju					
	01.Upper limit(mA)	5				
	02.Lower limit(mA)	0				
0	1.Test card selection					
	TEST	Loop test				

9. DC withstand voltage parameters

1.Withstand voltage test card

Test card selection: test card 1, test card 2, test card 3, etc

2.DC withstand voltage parameters

Test range: 1mA,5mATest voltage Boost time: 0.01S - 10SDelay time: 0.0S - 99STest time: 0.1S - 500SDrop time: 0.01S - 10SArc sense: 0 - 7Test compensation

3.DC withstand voltage judgment parameters

Upper limit, lower limit

	Multimete	er					-	\times
Те	st Type	DC withstand voltage test	~					
	rameter	S		Dele				
	2↓ 🖾				ti (High v	oltage / SP)		
~		hstand voltage test card		1				•
		card selection	1 2 3 4 5 6 7		Point	01-01-001		
~	02.DC	withstand voltage paramet			Alias			
>	01.Test	range	1mA		Allas			
	02.Test	voltage(v)	100	Point	t2 (Low vo	oltage / DP)		
	03.Boo	st time(s)	0.2	2				-
		y Time(s)	0.5		Point	01-01-002		
	05.Test	Time(s)	0.5			01-01-002		
		o time(s)	0.1		Alias			
	07.Arc \$	Sense	5					
		compensation(mA)	0					
~	03.DC	withstand voltage judgmer	nt parameters					
	01.Upp	er limit(mA)	5					
	02.Low	er limit(mA)	0					
01	.Test ca	ard selection						
		TEST	Loop test					

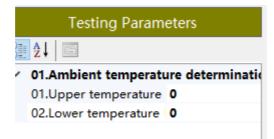
11. Diode regulator test parameters

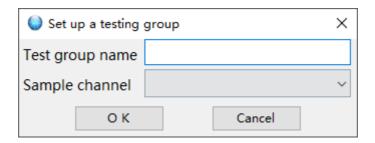
Test voltage: 1V – 10V Channel delay: 0mS– 200mS

Multimeter				-	\times
Test Type Diode regulator test	~				
Parameters					
1 2 I		Point1 (High v	oltage / SP)		
 • 01.Diode test parameters 		1			•
01.Test voltage(v)	5	Point	01-01-001		
02.Channel delay(ms)	5	Alias			=
		Point2 (Low vo	oltage / DP)		
		2			-
		Point	01-01-002		
		Alias			
01.Test voltage(v) Limits: 1v~80v					
TEST	Loop test	1			

12. Ambient temperature test

As needed, add the corresponding number of channels and their channel numbers, and then set the upper and lower temperature limit ranges (Note: This test project needs to set the corresponding parameters and enable the temperature channel in the temperature channel setting set by the system), as shown below:





4.11 Data query

Distributed	Distributed wire test system(10mΩ) V1.1.6.0										
<u>F</u> ile <u>V</u> iev											
•			2		<u>،</u>	Q					
New	Load	Manage	Settings	Self-test	Test	Find	Multimeter	Query	User	Password	

Click [Query] to enter the data query interface.

文件(E) 視園(V)				
····································	新統自检 創試機式 抵点	万用表 数据管询 用户管理 移政会码		°C
产品编号	工程名称	最高级自由其间	□▼ 结束时间	 检查主要
周运结果 PASS ~				直看明细表
				导出数据
产品编码 項目名称 测试时间	商试人 结果			

Fill in the test conditions: product number, project name, select test results, start time, and end time, click **[Search Main Table]** to search and display the results.

Select the items you want to operate and click **[Export Data]** to export the current data. Click **[View Details]** to display detailed information.

🔵 Di	istributed	l wire test syste	em(10mΩ	2) V1.1	1.6.0								
E	e <u>V</u> ie												
	P New	Load N	file 1anage		X ettings	Self) -test	۲est	e Find	J Multimeter	Query	User	Password
Net	w Load	Manage Settings	Self-test	Test	Find	Meter	Query	User Pass	word				
	Login ID		Use	r Name			Gro	up		Password		Login ID	
•	admin		當理	员			Adn	ninistrators		8D969EEF6ECAD3C29	A3A629280E686		
												User Name	
												Group	~
												Password	
													Save
													Delete

4.12 User Management

Login ID: the name filled in when logging in;

User name: the name displayed in the status bar after logging in;

User group: divided into three types: administrator, programmer and operator.

The administrator has the highest authority and can operate all functions.

The programmer has all functions except user management.

The operator has all functions except user management and project management

Password: the password filled in when logging in

Note: when logging in to operator mode, you need to manually enter the user ID for the first time, as shown in the figure below:



On the right side of the interface, you can add and delete login ID information, select user groups: administrator, programmer and operator, enter login ID, user name and password, click [Save] to save, and click [Delete] to delete ID information.

Login ID
User Name
Group
Administrators ~
Password
Save
Delete

4.13 Change Password



Click **[Password]**, then the interface will pop up the change password page, enter the original password, new password and confirm password of the login account, and click **[OK]** to change.

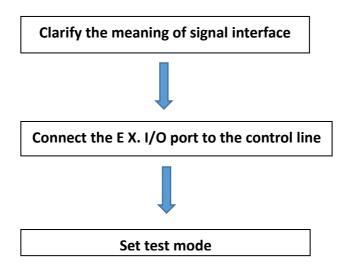
Change Password	×
Original password	
New password	
Confirm password	
ОК	

Chapter 5 EXT I/O Port (Handler)

EXT I/O terminals on the back panel of the instrument support external control, provide the output of the test signal, and accept the input signal. Optocouplers are used for all input signals. Understanding the internal circuit

structure and paying attention to safety matters is conducive to better connection to the control system.

Understanding the internal circuit structure and paying attention to safety precautions are beneficial for better connection to control system.

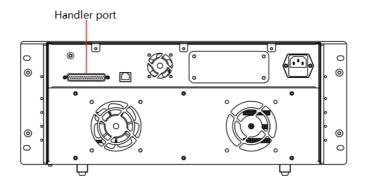


5.1 EXT I/O Ports and Signals

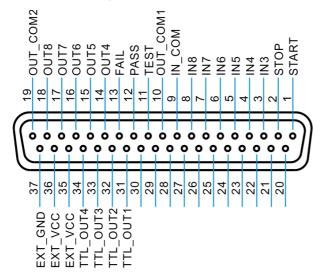


Do not plug and unplug the EXT I/O port during the test Do not connect IO port to the test port

Port and signal description



Port detailed diagram

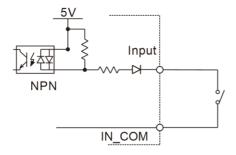


Pin	Pin name	Pin function	Remarks
number			
1	START	Start the test	
2	STOP	Stop the test	Connect
3~8	IN3~IN8	Reserved input port,	external
		expandable function	passive
9	IN_COM	Common port of the input	contact
		signal	
10	OUT_COM1	11-14 common terminal of	

output signal	
Output signal during the	
test	Output
Output test pass signal	relay signal
Output test fail signal	
The fourth output signal	
3 Reserved fifth to sixth	
output	
Fifth to sixth output	
common port	
Level output signal 1	
Level output signal 2	Output
Level output signal 3	level signal
Level output signal 4	
External power supply	
positive input	
External power supply	
negative input	
	Output signal during the test Output test pass signal Output test pass signal Output test fail signal The fourth output signal B Reserved fifth to sixth output Fifth to sixth output common port Level output signal 1 Level output signal 2 Level output signal 4 External power supply positive input External power supply

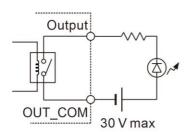
5.2 Port Signal Connection Method

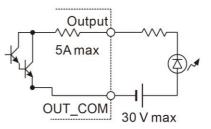
Input circuit connection



Signal input

Output circuit connection





Relay output

Level output

Chapter 6 Parameters

6.1 Basic Parameters

Basic functions

Model	DP6000		DP6000S			
Measurement methods	Inner four-w	Inner four-wire type + outer four-wire				
Maximum	256		128			
number of test points						
AC high voltage		3	30-2000V			
DC high voltage		3	30-2000V			
High voltage output accuracy			±5%			
High	±5%					
voltage measurement accuracy						
High	0.1s - 500s					
voltage measurement time						
	O/S, intermittence		2kΩ-200kΩ			
	O/S,					
	quick intermittence					
	open circuit					
	Inner four-wire		0.1Ω-1ΜΩ			
	conductior	n				
Test items and scope	impedance	e				

	External	Test r	ange	10μΩ-1000kΩ
	four-wire	Current	signal	≤1A
	connectio			
	n test			
	AC high-v	voltage	0.	01mA-10mA
	leakage o	current		
	DC high-	voltage		1µA-5mA
	leakage o	current		
	DC high-v	voltage		1ΜΩ-50GΩ
	insula	tion		
		Measur	ement	10mΩ-1MΩ
	DC	ran	ge	
	resistanc	level s	ignal	0.5-10V
	e current si		signal	≤10mA
		Capacitance		10pF-100µF
		measurement		
		range		
		Resist	ance	100mΩ-20MΩ
		measur	ement	
		ran	ge	
		Induct	ance	10nH~100H
	LCR	measur	ement	
		range		
		Frequ	ency	50Hz/60Hz,100
		sigr	nal	Hz/120Hz/
				1kHz/10kHz
		Range	mode	AUTO/HOLD
			signal	0.1V-1.0V
	Diode/Ze	Test ra	ange	0-10V
	ner diode	Test s	ignal	1mA
	Single-sid	de test		Yes
	O/S Ter	minal		Yes
	Judg	je		
			1	

Advanced function items	Programmable continuous test/ Automatic	
	point search/ Auto-diagnosis	
Test scan mode	Automatic/manual/external	
Measurement signal	Low voltage measurement signal	
Storage memory	umber of test files up to 500 sets	
OS voltage	5V	
Control panel	Calibration/metrology	
Weight	22kg (6000) /17kg (6000S)	
Dimension (W*H*D)	483*265*510 (6000) /483*183*510 (6000S)	

6.2 Accuracy

The following indicators test conditions:

Temperature: 20±3°C

Humidity: < 80%RH

Preheat time: more than 15 minutes

Calibration time: within 1 year

Test Item	Range	Basic accuracy
OS test	2k-200kΩ	±5%
Two-wire	0.1Ω~1ΜΩ	±0.5%+0.05Ω
on-resistance		
measurement		
Four-wire	10μΩ~1ΜΩ	±0.2%+5μΩ
on-resistance		
measurement		
DC resistance test	0.40, 4140	<100k:±1%
	0.1Ω~1ΜΩ	>100k:5%
LCR test	10pF~100uF	±2%
	100mΩ-20M	±2%
	10nH~100H	±2%
Diode test	0~10V	±2%±0.2V
Insulation test		1M~100M: ±2%
	1MΩ~50GΩ	100M~1G: ±5%
		1G~5G: ±10%
AC leakage test	10µA~10mA	±3%

DC leakage test	1µA~5mA	±3%
AC withstand voltage	30~2000V AC	±3%
source	(50/60Hz)	±370
Insulation/withstand	30V~2000V /3000V	±3%
voltage source	DC	
Low voltage signal	5V/10mA	±3%
source		
Low voltage test	10ms ~ 200s	±1%
timing time		
Voltage/insulation	0.1s ~ 500s	±1%
test timing time	0.13 ~ 5005	±170

Chapter 7 Operations

7.1 DP6000 Tester and Software Basic Operation Process

1. Connect the **DP6000** to the power supply;

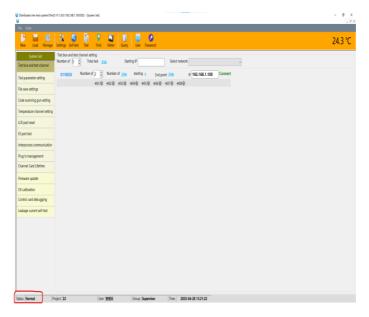
Connect **DP6000** to the computer through a network cable for communication;

Plug in the test line and test port.

2. Boot the computer and open the software (default user name: admin;

Password: 123456)

Check if DP6000 tester and computer communicate successfully, showing in the lower left corner of program interface.



If the communication is successful, the project can be established; If it shows *Waiting for communication*, it means that the device and the computer are not communicating, and the IP address must be changed in the software and on the computer, as shown in the figure



The IP address of the **DP6000** tester can be changed to 192.168.1.100 (the address is the same as the IP address on the device); the computer can be changed to 192.168.1.2 (the IP cannot conflict with other IPs on the computer), as shown below:

Internet 协议版本 4 (TCP/IPv4) 属性



 \times

Steps to change the IP address of the computer

Go to *Network* and *Internet Settings*, click *Change Adapter Option*, find *Ethernet*, right-click *Properties*, and then select *Internet Protocol version 4 (TCP/IPv4)* and double-click, Select the item *Use the Following IP Address* to change the IP address.

3. Create a new project or load a project, and then enter the project management for point learning and test item selection (please refer to the above manual for detail steps);

4. Enter the system setting interface to select the test result saving path (please refer to the above manual for detail steps);

5. Enter the test interface to start the test or use contact detection and external trigger detection.

92

- This manual is edited and revised by the Hope Instrument Electronic, version number V2.0.
- If there is any incorrect or unreasonable point in the manual, please contact us, welcome to call for technical consultation.
- Contact information is subject to change, please pay attention to our website.
- The copyright and interpretation rights of this manual belong to the company.