PREFACE

Thanks for ordering the product of our company, and we will give the technical support and the services of the product.

Our company will give a quality guarantee of three years of the product.

Before using the product , please read the user manual to prevent from the risks of the damage to the product, and ensure the human safety. For the details ,please contact us by email or telephone.

NOTES

please notice that it's only allowed to work with well trained personnel and with the power systems familiar personnel.

the connect action of the test lines should be done before supply power to the instrument.

when the instrument is powered on ,the operator should not touch the testing circuit loop. and the ground should be well connected.

use the original connecting line as possible.

don't switch the instrument on or off with the power supply connected to the system, this is to prevent accidental operation.

Operating temperature: - 10 °C to 50 °C; storage: - 20 °C to + 70 °C. Relative humidity : 5 - 95%, without condensing.

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ONE CHARACTERISTICS

Test indicators: Can test various domestic (imported) vacuum, sulfur hexafluoride, oil high-voltage circuit breakers, load switches, GIS grounding knife switches, contactors, relays, air switches, etc. Various data and waveforms including closing and opening time, synchvd p

TWO INTRODUCTION

LCD :5.7″black and white lcd screen the brightness is adjustable.

Printer 58mm wide thermal printer .

Ground Protective earth connection.

Main supply AC220/240 60Hz with two fuse in the box, one in use ,the other for spare use .

Communication

RS232C 57600bps

USB FLASH DISK export the test results to the external usb flash disk.

USB communica

DC POWER

+ - outputs the internal dc power ,it'

TH[illegible]u sp[illegible]

TEST

[illegible] DE [illegible] at[illegible] the [illegible]tion [illegible]f the tra[illegible]ucer.

[illegible]

- i[illegible]ates the very co[illegible]ct is closing
- ○ indicates the very contact is opening.

Parameters set shows the current setting parameters.

TESTMODE indicates the current test program's test mode

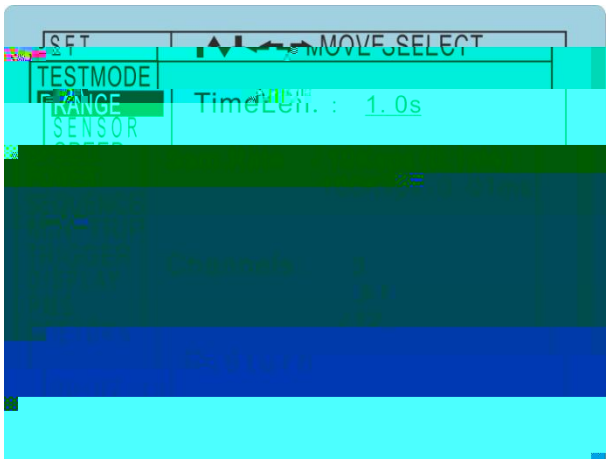
SPEED DE[illegible]ITI[illegible] indicates the current test program's speed definition

SEQUENCE the [illegible]rt key of the open or close set This parameter can also be set from the MENU-SE[illegible] SE[illegible]ENCE

POWER i[illegible] current test program's power mode(internal power, external power or external trig mode)

SET set the test-mode, range, transducer(sensor), speed definition, power mode, sequence, minimum twop-voltage , twigger and display of the test

SET—RANGE

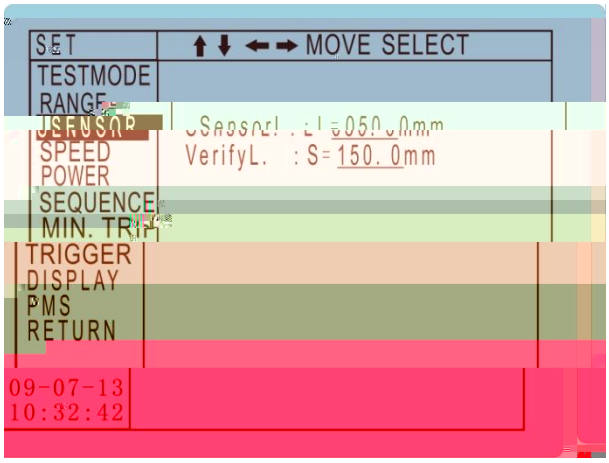


Time Length the range can be set from 0.1 to 20.0s,this is the record time length

SampleRate there are two choices of the sample rate, includes 10Ksps and 100Ksps,But here supply 10Ksps only.

Channels this is the channels of the test program, it has three choices, includes 3 ,6 and 12

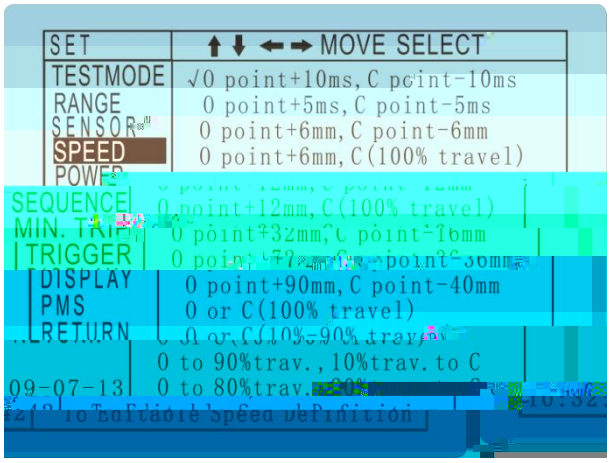
SET—SENSOR



Sensor Length this is the line transducer ' s total electrical length, the operator can set the transducer ' s length here.

Verify Length this is the rotary transducer the operator can set the circuit breaker ' s total length(stroke) here.

SET—SPEED



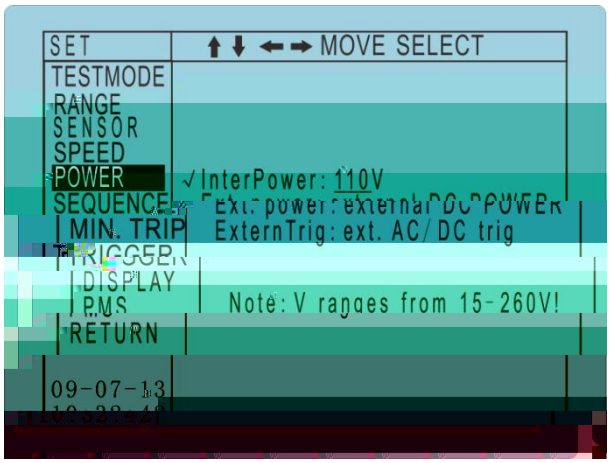
For the reason that the speed definition of circuit breaker maybe different from each other ,the user can select the very speed definition of the test program.

un-editable speed definition

if the operator thinks that the speed definition in the un-editable speed definition part is not suitable, then the editable speed definition part maybe useful. Of course the operator can use the cursor in the graph to analyze the speed .

editable part

SET—POWER



Internal Power the operator can set the voltage from 15 to 260V. the + - port on the instrument's face can output the internal dc voltage as setting.

External power if the operator select external power, then internal power is turned off automatically, the operator can connect the external power to the + - part on the face

External trigger if the operator select the external trigger ,then the internal power is automatically turned off ,the operator can only connect the lines from the close coil and open coil's voltage to the face's open ,common and close ,then the instrument can be trigged from the open or close coil's dc or ac voltage.

SET--SEQUENCE

O/C the

instrument.

Another choice [illegible] judge from the [illegible]s current state [illegible] the operator must connect [illegible] close coil [illegible], [illegible]on and close of [illegible] panel.

The operator can only select only one at a time.

Notes

DC110V coil start voltage can be set to 30V the end voltage can be set to 110V

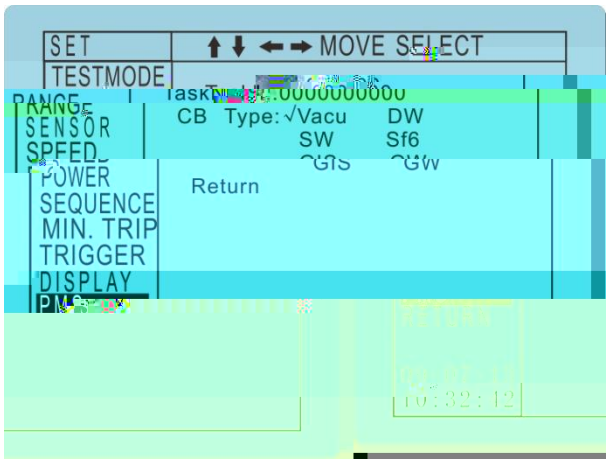
DC220V coil start voltage can be set to 60V the end voltage can be set to 220V

If the steps is small, then the test time is much longer.

If the delay is large , then the test time is longer .

The test results table of the auto mode can be printed or saved,

SET--PMS



The PMS is for the ZheJiang Province's Power System use, to send the test results to the pc terminal through Bluetooth communication.

FILE: the operator can see the history ,results table , graph and so on .

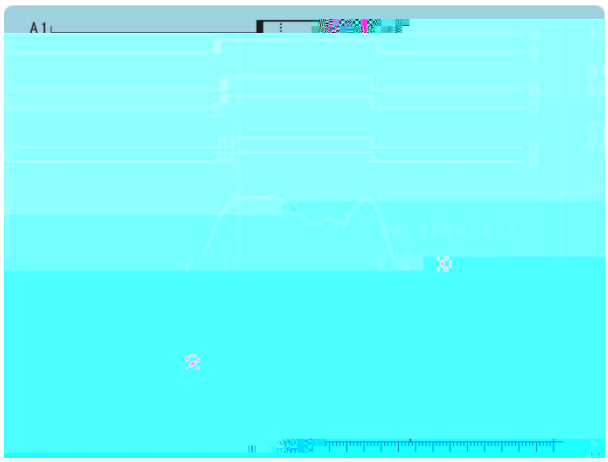
FILE--HISTORY

The operator can find ,open and delete the history test results.

FILE--TITLE

this table supports the edit of the ypÐ ð

FILE--GRAPH



the operator can analyze on the graph

press → ← to move the first cursor and the current cursor's time and s are displayed on the screen; if press the enter ,the first cursor is been locked then press→ ← to move the second cursor, and this time the delta time and delta s are displayed on the screen ,and the velocity is displayed on the screen too.

during the cursor moving mode ,if press the key named cursor ,then enter to the graph's zoom mode ,so this time the operator can press the zoom in ,zoom out key to view the details of the graph ,and also the operator can press the left or right move key to move the content on the screen. If the operator press cursor key another time ,then the operation mode of the graph returns to the cursor moving mode again.

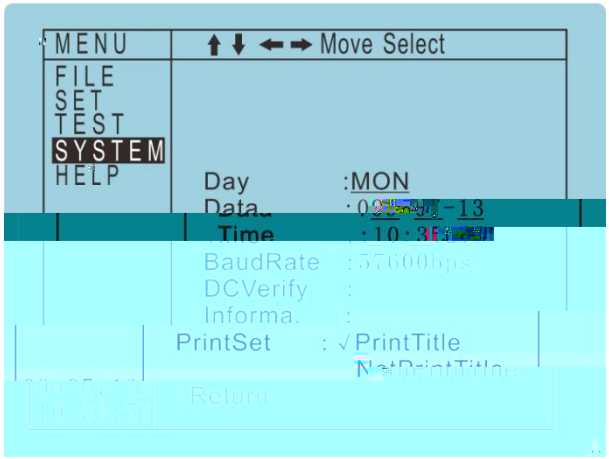
File--USBFLASH

Store current data store the current test data to the usb flash ,then on the pc software ,this test data can be opened.

Store all data store all data in the instrument's memory to the usb flash disk.

Return: return to the upper menu.

SYSTEM



Day: set the day of week.

Data :set the year ,month and data.

Time :set the hour ,minute and second.

Baudrate the baudrate is 57600bps

DC Verify Press key enter into the verification of the voltage.

Information: this is used for the debug in the factory.

Printset this is a choice between print the title or not print the title.

HELP this is the help topic.

HELP--CHANNELS

As show on the screen , the help menu displays the port connect way.

FOUR PC SOFTWARE SPECIFICATION

1 PC SOFFWARE MENU

1.FILE

New : create a new test.

Open : open a test results.

Save to SD card give a command to the instrument to save the current test results to the internal SD card .

Save :save the current test to the hard disk of PC.

Save as :the function is similar to the save .

Print preview: take a preview of the test results.

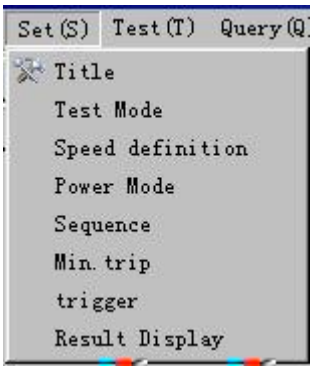
Print : print the test results on the printer directly.

Export : export the test results to the word or excel format.

History : can view the sd card ' s storage status and can upload or delete the results.

Exit : exit the pc software of circuit breaker testing.

2 SET MENU



Title the title is a test information ,it ' s editable.

Test mode this part has the time length , sample frequency ,test mode and sensor.

Speed definition : it has the channels ,max speed , and the speed definition.

Power mode : set the power mode of the test.

Sequence : set the open , close ,open-close , close-open ,close-open-close and open-close-open .

Minimum trip voltage : set the information of the minimum trip voltage test .

Trigger : set the trigger of the test plan .

Results display : set the parameters show or not show in the results table .

2.1 Title

the operator can [illegible] the circuit breaker's information and the [illegible]ter's information, these information can be stored on the pc .

title write : this means that the information can be send to the instrument ;

title read : this means that the information can be read to the software and display here .

2.2 Test mode

Time length : the recording time [illegible] Ranges from 0.1s to 20.0s .

Sample frequency : we offer two types [illegible]

2.3 Velocity

Ch[illegible]s : the instru[illegible]3 choi[illegible]S.12

The [illegible]or should s[illegible]i[illegible]ne[illegible] th[illegible]

tes[illegible]

Spe[illegible]definition : th[illegible]niti[illegible]a[illegible]

edi[illegible]e pa[illegible]rt 1/and the m[illegible]ert[illegible]ra[illegible]

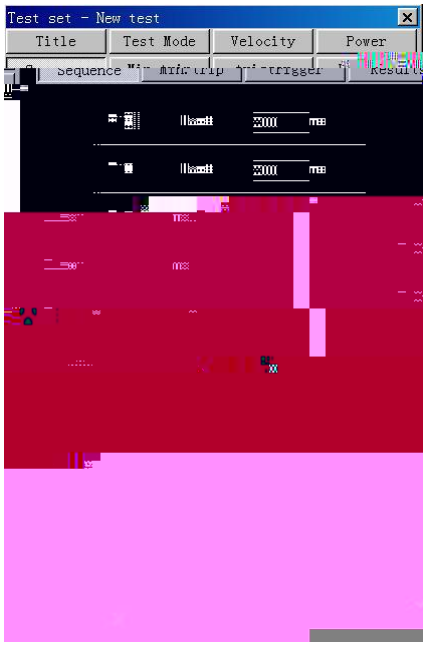
can[illegible]ect the speed def[illegible]

2.4 Power

Internal power : the internal power can ranges from 15V to 250V.

External poo[illegible]def.in[illegible] [illegible]

2.5 Sequence



O/C the open or close operation's voltage lasts XXXX ms

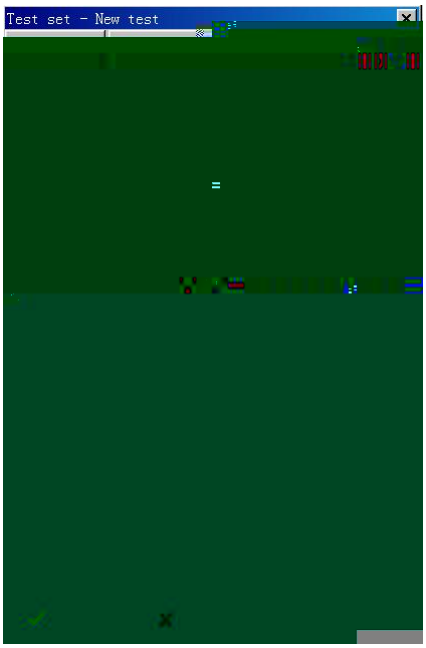
O-C the open operation's recording lasts XXX ms, and then output the close coil's voltage.

C-O the close operation's recording lasts XXX ms, and then output the open coil's voltage.

O-C-O the open operation's recording lasts XXX ms, and then output the close coil's voltage, the recording time length lasts XXX ms, and then output the open voltage .

C-O-C the close operation's recording lasts XXX ms, and then output the open coil's voltage, the recording time length lasts XXX ms, and then output the close voltage .

2.6 Minimum trip voltage



Control Mode if the operator select the auto mode, then the following parameters can be set ,if the hand mode, the following parameters can not be set ,the voltage can range from 15V to 260V from the panel's keys.

Start Voltage this is the start voltage that been added to the open or close coil.

End Voltage this is the end voltage of the minimum trip voltage test .

Pulse Step this is the increase step of the voltage .

Pulse Delay this is the delay between the steps of the voltage .

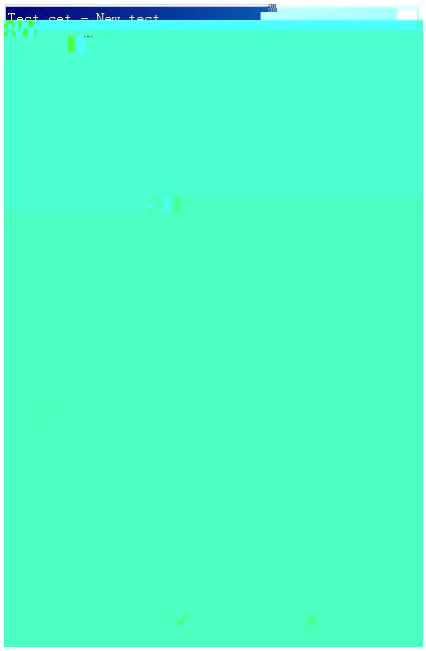
Judge Mode the instrument judges if the operation is over or not from the condition.

There are two choices:

One is to judge from the ports state, if the port states have been changed , the test is over, so the operator must connect the ports lines of the circuit breaker to the

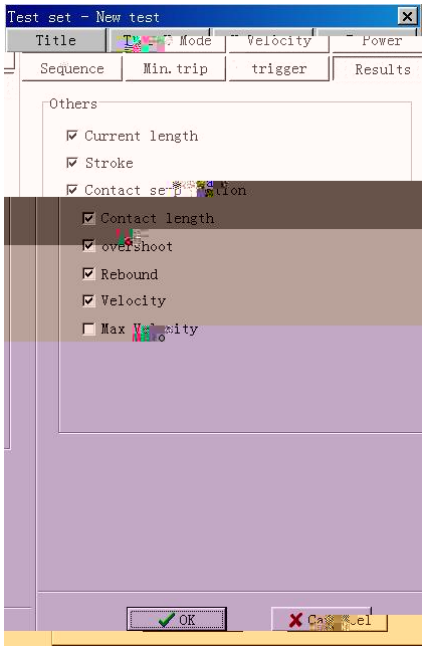
instrument.

2.7 Trigger



There are four choices for the trigger, such as the coil's voltage, coil's current, the sensor's state and the contacts' states. and the current's value can be set.

2.8 Results



set the parameters display or not display in the test results table .the parameters includes the following parameters, current length , stroke ,gap(contact seperation), overtravel(contact separation), overshoot, rebound ,average velocity ,max velocity .

beu

3.Test menu

Channels :

- ● indicates the very contact is closing
- ○ indicates the very contact is opening.

Sensor : this cursor indicates the location of the transducer.

Parameters set :

Testmode :indicates the current test program's test mode

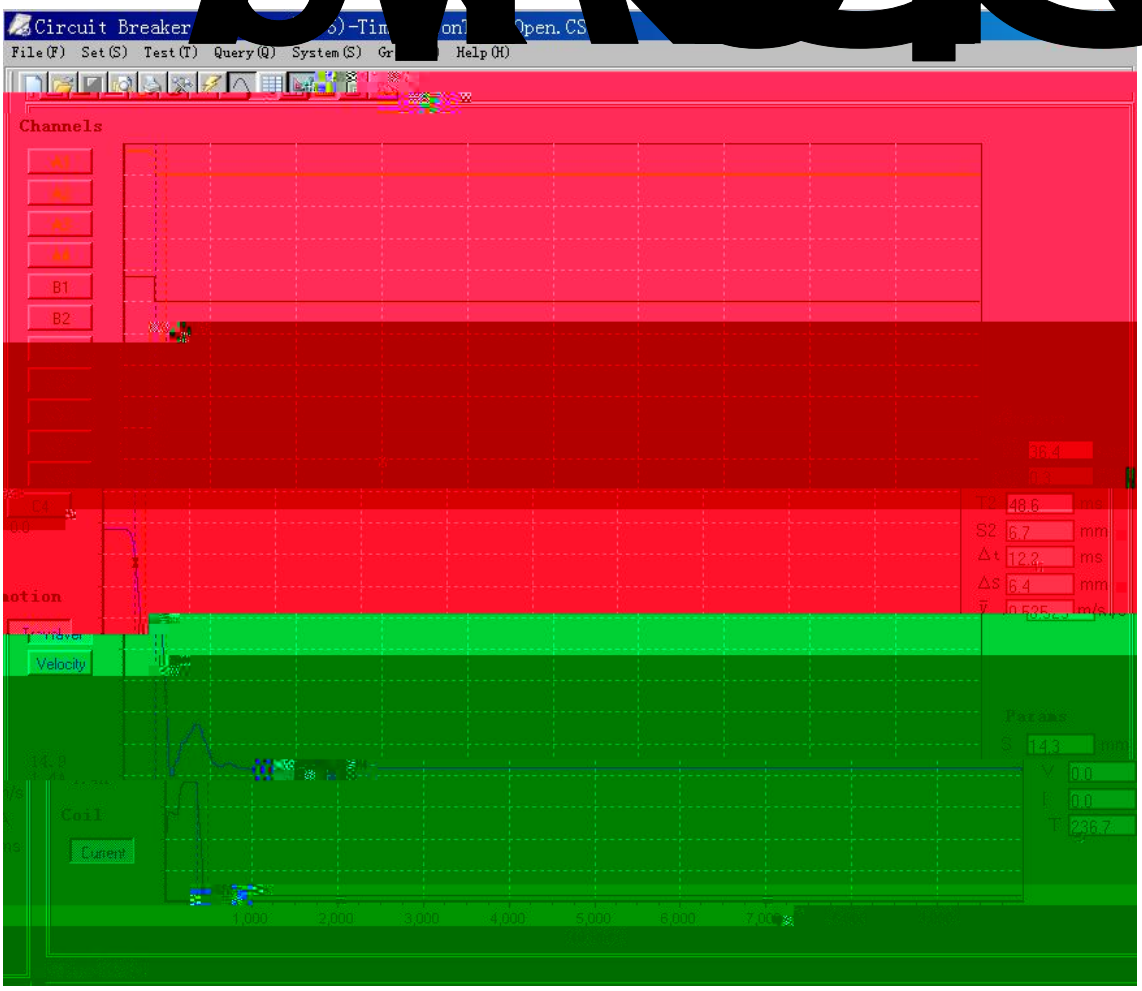
Time length : this is the recording time length.

Maximum Speed : the time interval for the speed calculation, the interval is 10ms.

Channels : indicate the test program's channels number.

Sequence : set the operation mode a a

4.1 Graph



Operation of the graph

Zoom in : put the cursor of the mouse in the very area ,then drag from top-left to right-bottom.

Zoom out : put the cursor of the mouse in the very area ,then drag from right-bottom to top-left.

Cursor on :press the left key on the mouse once to put the cursor on .

Cursor off :press the right key on the mouse once to cancel the cursor .

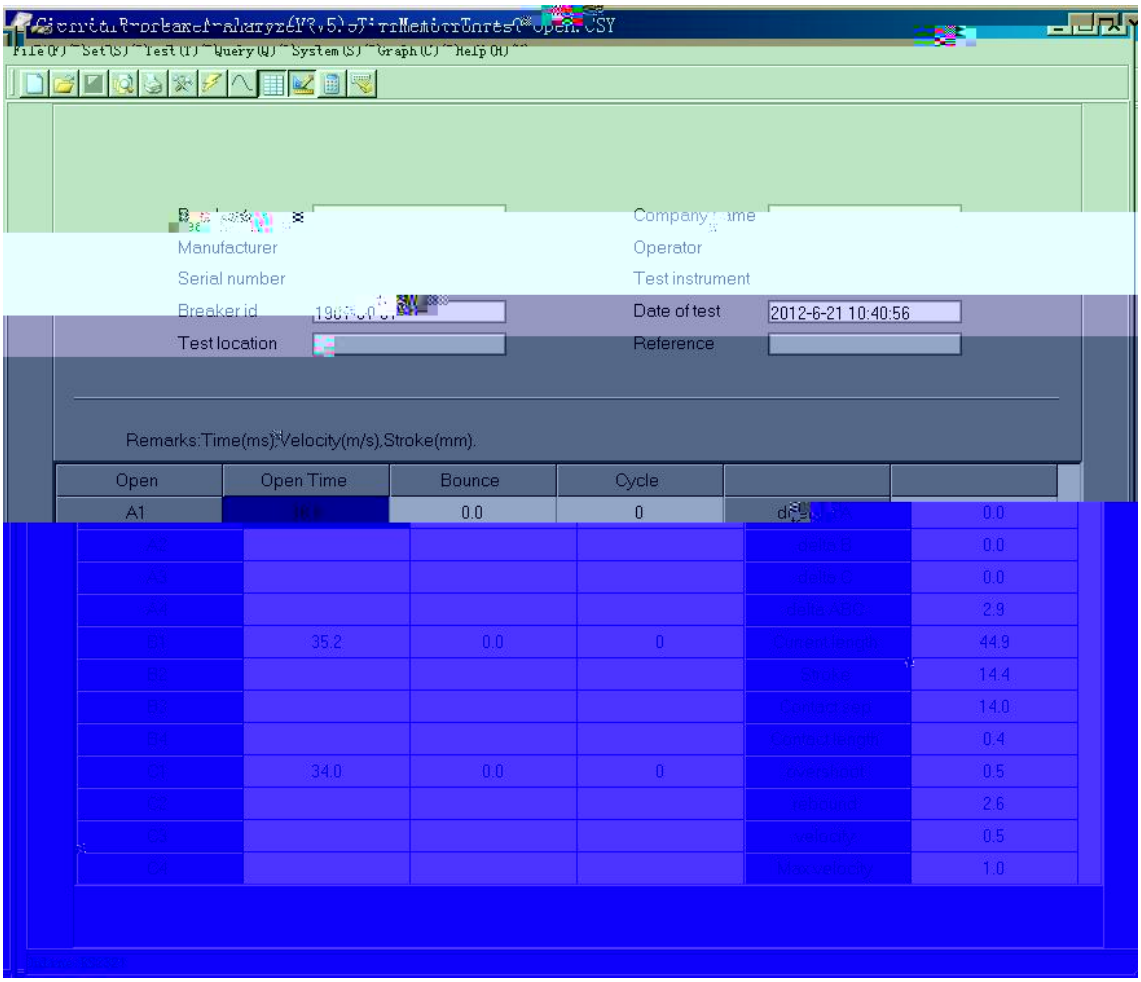
Channels : display the selected channels's graph.

Motion : the demo display is the time-motion graph,press Velocity to the graph of the velocity

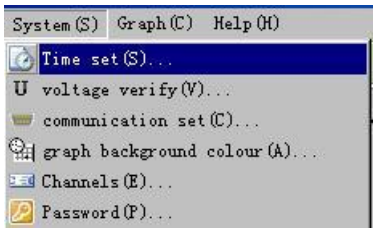
press motion to the motion graph.

Coil current: display the current of the

4.2 Results Table



5. System



time set : set the time of the instrument or read back the time from the instrument.

Voltage verify : the verification of the internal power.

Communication set : set the communication mode (usb or rs232 , and the 232 port number).

Graph background color : set graph ' s background color.

2 Short Keys

C

Fi[illegible] Technical specifi[illegible]ns

[illegible] channels: 12 channels with 25V [illegible] urrent is [illegible]mA

Transducer: one analog transducer .

TIME:

Recording time lengt[illegible] 20.0s
Time accuracy [illegible]ding ± 2 LSB
Resolution [illegible]

Motion:

Range : 0[illegible]000mm
Accuracy : ±1% reading ±1LSB
Resolution : 0.1mm

Velocity :

Ranges [illegible] 0.01 20.00m/s
Accuracy :±1%reading ±1LSB
Resolution : 0.01m/s m"

DC POWER :

Ranges : 5[illegible]60V
Max current : 20A
Accuracy : ±1%reading ±1LSB
Load change :≤1%

TRIGGER:

Voltage : 15 [illegible]V, [illegible] 6
Current : 0.1-20A
Tranducer : the transducer states changes
Channels : channels states changed

DIMENSIONS : 380mm×262mm×120mm

WEIGHT : 8kg

OM 8