

# EEM Software manual

(Version. 1.4.7)

Date: 2020/01/07



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## 1. Installation and update

Consist of two file, one is EEM software, another is its update.

 1 - emcs(en)_setup(win7_2003)	2016/8/25 12:34	360压缩 ZIP 文件	28,487 KB
 Software Update	2016/9/5 16:14	应用程序	5,289 KB

Unzip the file before installation





emcs(en)\_setup(  
win7\_2003)

 data	2016/1/4 13:14	文件夹	
 autorun	2007/7/11 15:29	安装信息	1 KB
 mia.dll	2007/7/11 15:29	应用程序扩展	168 KB
 setup	2006/4/4 22:17	BMP 文件	2,182 KB
 setup	2007/7/11 15:29	应用程序	2,287 KB
 setup	2007/7/11 15:29	Windows Installer 程序包	417 KB
 setup	2007/7/11 15:29	RES 文件	4,490 KB



setup

After installation, install the update.

 1 - emcs(en)_setup(win7_2003)	2016/8/25 12:34	360压缩 ZIP 文件	28,487 KB
 Software Update	2016/9/5 16:14	应用程序	5,289 KB



Software Update

## 2. Authorization & compatibility

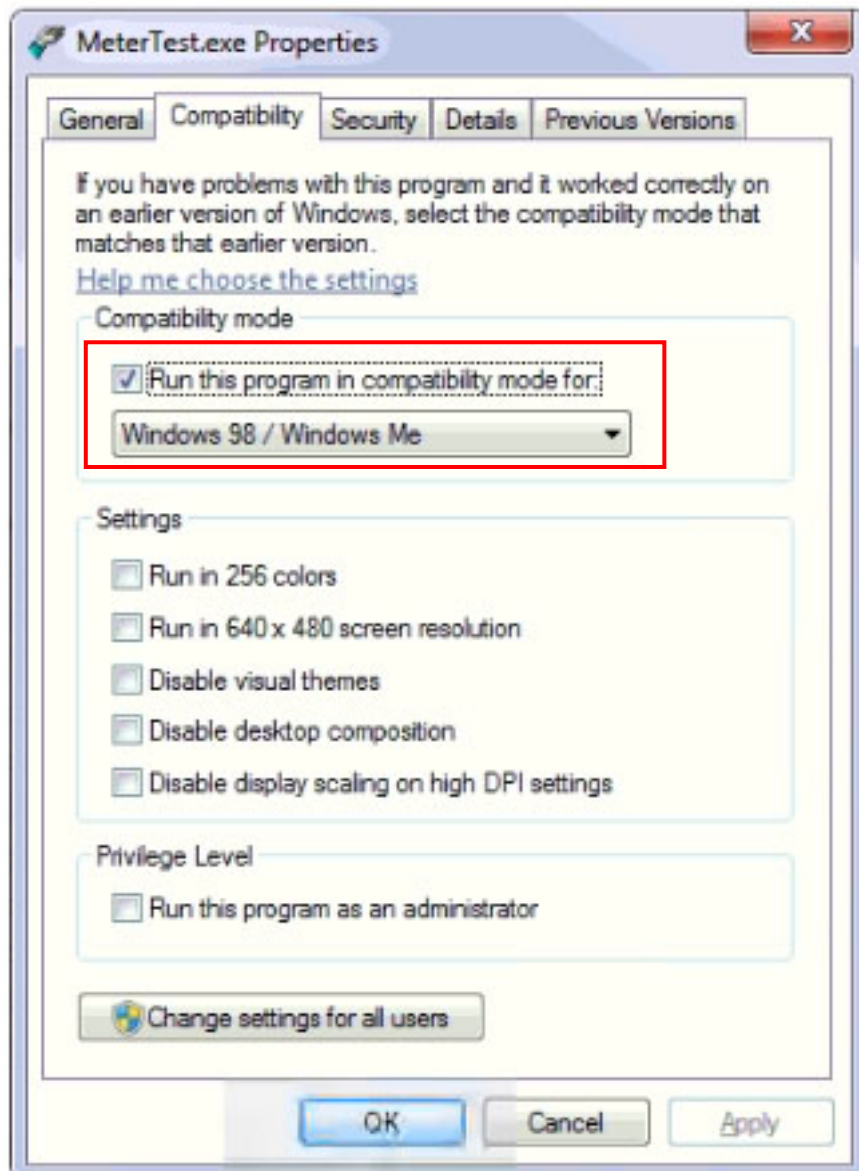
MeterTest.exe set the software to compatible with Windows 98.

MeterTest.exe is located at the default file part,

C:\Program Files\EEM Calibrator system\geny soft\emcs



MeterTest



### 3. Start up the EEM software

Start EEM software from 'Start EEM' icon on desktop, this is a 'bat' file. It's to program the EEM metertest.exe to run at single CPU environment.



#### 3.1. User log in

Account: XXB, Password not required

Account: Administrator, Password: yckj

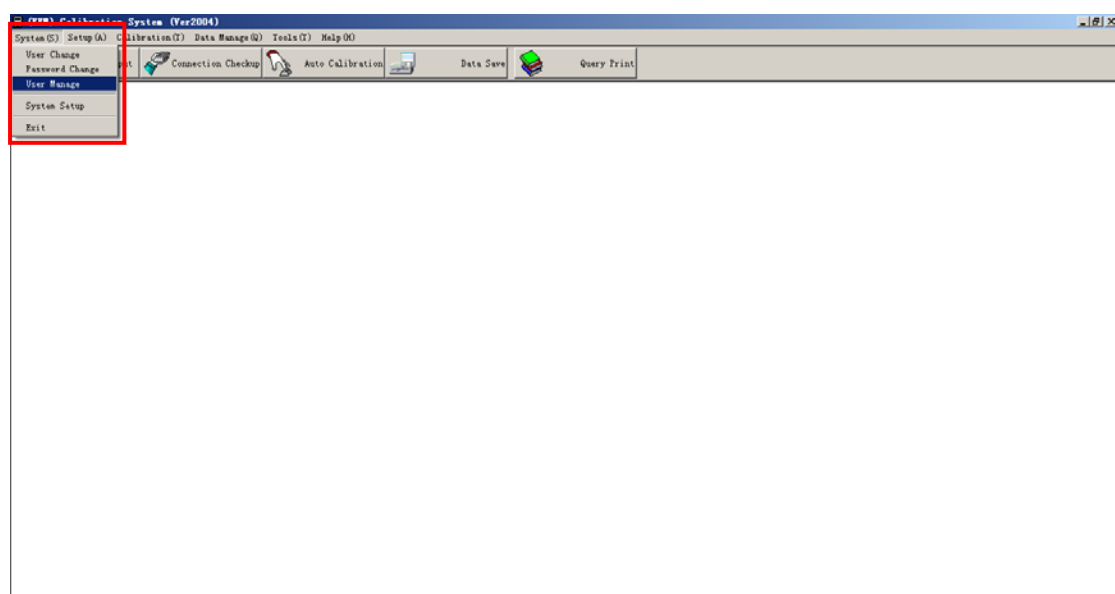
**(EEM) Calibration System (Ver2004)**


 User Name:

User Password:

User Identify:

### 3.2. User management



**User Manage**

User Name	User Identify
YFB	Operator
XXB	Administrator
yc	Administrator

Selected User:

User Identify:

☒ Administrator  
☐ Operator

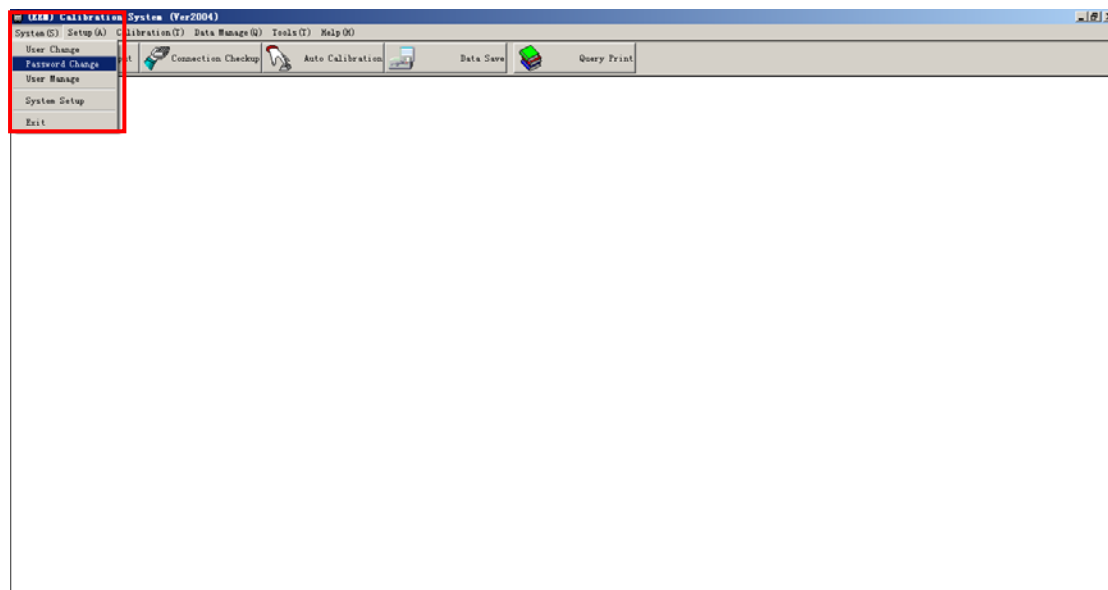
Remark: New added user's password is empty.

Access:


User	System setup	Calibration project	Meter parameter modify	Save calibration result	Query and print
------	--------------	---------------------	------------------------	-------------------------	-----------------

Administrator	✓	✓	✓	✓	✓
Operator	×	×	×	✓	✓

### 3.3. Password change



**Password Change**

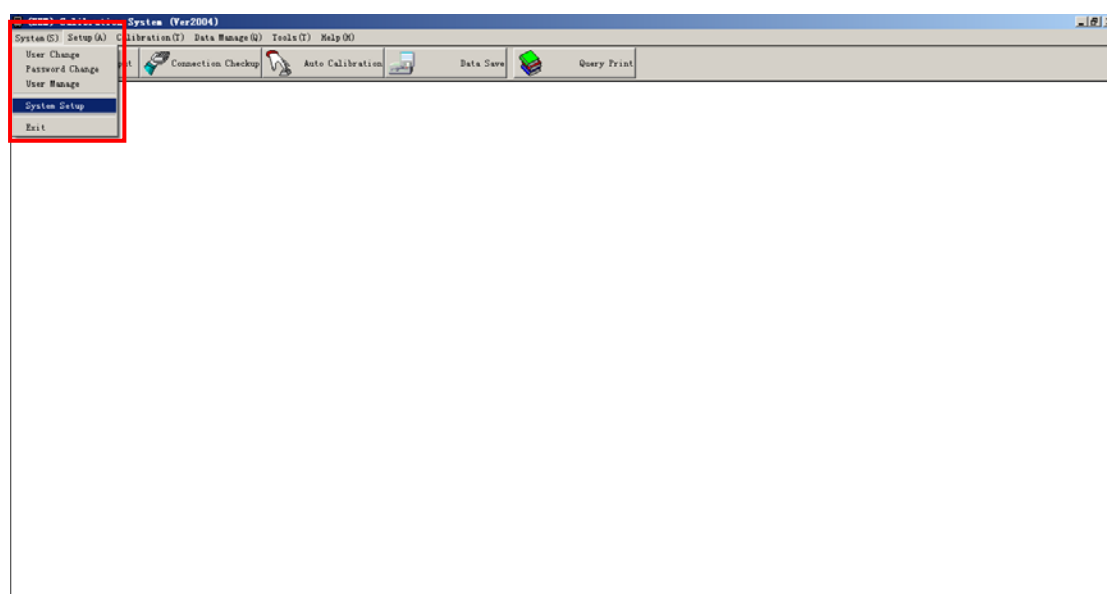
 User Name:

Old Password:

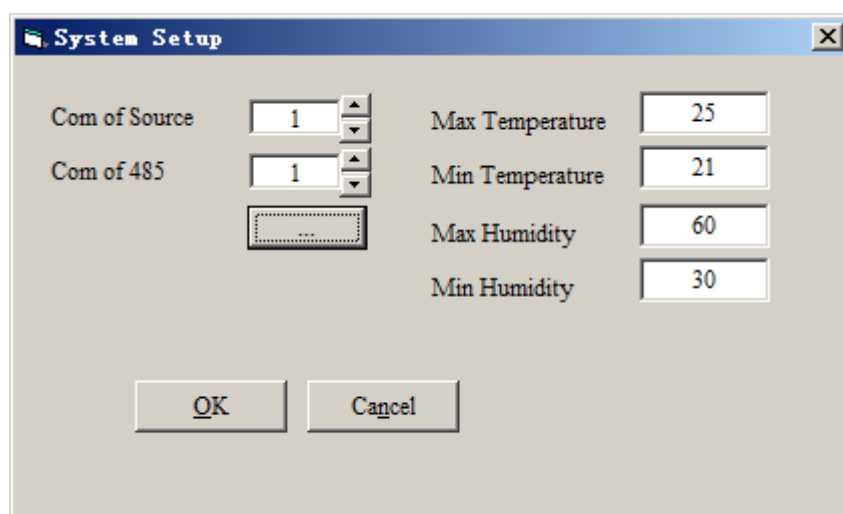
New Password:

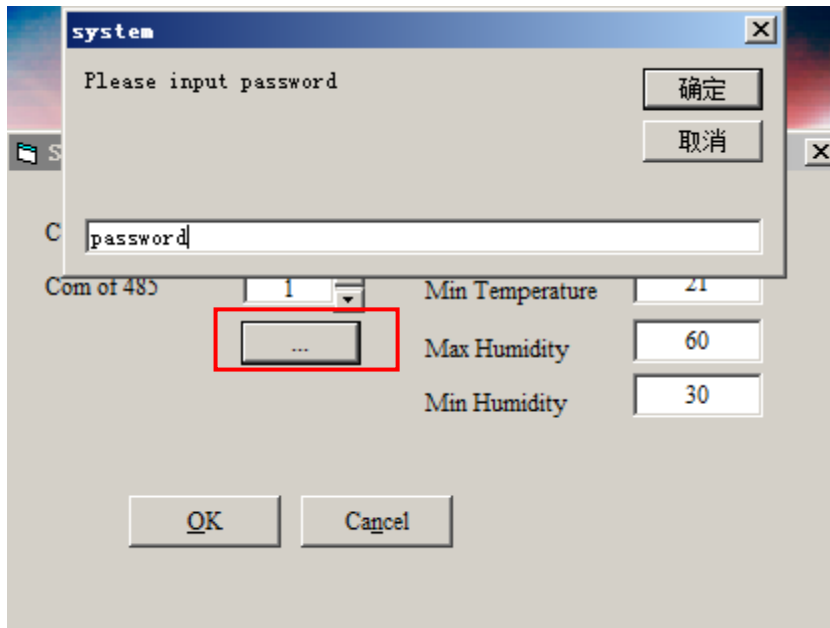
Pwd confirm:

#### 4. System setup



Log in system setup password: password





#### 4.1. Basic info

Device setting : Three phase or

Separate Single out : A(single phase mode use phase A current as test current)

Device serial number: 0317031

Com of source: 1 (depend on the PC hardware setup)

Position: 24(total meter position of test bench)

Option of faster getting result

Option of net type of device

Digital: 4 (decimal place)

Meter: 6 (6 meters per a error calculator board)

Comma-separated of list of first number of each error calculator device: leave it blank.

(For 24 position test bench with 4 meter position per each error calculator: 1,5,7,13,17,19 )

Check point delay: Delay



**System Setup**

Basic Info | Real Gear | Reference Meter | Others | channel

**Device Setting**

☐ Single Phase ☒ **Three Phase**

☐ Voltage Mutual Inductance

☐ Current Mutual Inductance

☒ **Seperate Single Output** **A**

Device Protocol: **IV.1**

Device Serial No: **0317031**

Device Certificate No:

Com of Source: **1**

Com of 485: **1**

positions: **24**

Gear Change Delay(s): 0

U/I Switch Delay: 2

Check point Delay seconds: **2**

☒ support floating DA output (such like 0.025 mA)

**Error Caculator**

Protocol: **IIII192Hub**

Digital: **4**

Meters: **6**

☒ Option of faster getting result

☒ Option of new type of device

comma-separated of list of first number of each error caculator device

☐ Allow Set S.T or C.T Pulse

☐ Catch Black Mark ☒ Auto ☐ Manual

☐ Raise voltage to Catch Mark(%U) **100**

**Client Information**

change background

undefined

FLAT FILE OUTPUT:

c:\ **browser**

OK Cancel

#### 4.2. Reference meter

Reference Meter Name SZ-03A-K6D

Multiple constants option

By communication

**System Setup**

Basic Info | Real Gear | Reference Meter | Others | channel

Reference Meter Name: **SZ-03A-K6D** Serial No. --

Sinle constant: 220 V 5 A Constant: 100000000

☒ **multiple constants option** ☐ By table as follow ☒ **By communication**

> (V)	<= (V)	> (A)	<= (A)	Constant
0	480	0	1	1000000000
0	480	0	10	1000000000
0	480	0	100	100000000

☐ Current Reset Firstly When Alter

Can Also Display ☒ Output Data ☐ Harmonic Graph

☐ Secondary Ref. Meter (if you have)

Name: **SZ-01A-K3D**

OK Cancel

#### 4.3. Reference meter for EDM (Radian)

**System Setup**

Basic Info | Real Gear | Reference Meter | Others | channel

Reference Meter Name: **Radian RD-30/31 Rel 6.xx** Serial No.: --

Single constant: 220 V 5 A Constant: 100000000

☒ multiple constants option ☒ By table as follow ☐ By communication

> (V)	<= (V)	> (A)	<= (A)	Constant
0	380	10	100	1.00E+07
0	380	1	10	1.00E+08
0	380	0	1	1.00E+09
*				

☐ Current Reset Firstly When Alter

Can Also Display ☒ Output Data ☐ Harmonic Graph

☐ Secondary Ref. Meter (if you have)

Name: **SZ-01A-K3D**

Radian Options

Radian Com. Port: 1 Radian BNC Port: **RAD PO RD3x PORT1**

OK Cancel

#### 4.4. Pulse sensor type

Direct connect will clips or use optical sensor

**System Setup**

Basic Info | Real Gear | Reference Meter | Others | channel

setting channel pad

MultiFunction

Reverse Active: 1

Forward Reactive: 1

Reverse Reactive: 1

Clock Pulse Error: 7

Demand Cycle Error: 8

Forward Active or other: 1

☐ Mechanical meter channel

☒ PulseType:Negative=2、Positive=3

☒ Pulsing test sequence (active -> reactive) ☐ reactive Warmup

☐ Two current channel switchable

OK Cancel

#### 4.5. Dual current selection

**System Setup**

Basic Info | Real Gear | Reference Meter | Others | **channel**

setting channel pad

MultiFunction

Reverse Active 1

Forward Reactive 1

Reverse Reactive 1

Clock Pulse Error 7

Demand Cycle Error 8

Forward Active or other 1

☐ Mechanical meter channel

☒ PulseType:Negative=2、Positive=3

☒ Pulsing test sequence (active -> reactive) ☐ reactive Warmup

☐ Two current channel switchable

OK Cancel

## 4.6. Pulse channel

### 4.6.1. Single sensor model

**System Setup**

Basic Info | Real Gear | Reference Meter | Others | **channel**

setting channel pad

MultiFunction

Reverse Active 1

Forward Reactive 1

Reverse Reactive 1

Clock Pulse Error 7

Demand Cycle Error 8

Forward Active or other 1

☐ Mechanical meter channel

☒ PulseType:Negative=2、Positive=3

☒ Pulsing test sequence (active -> reactive) ☐ reactive Warmup

☐ Two current channel switchable

OK Cancel

### 4.6.2. Dual sensor model

Active pulse on the left side sensor, while reactive pulse on the right side sensor.

**System Setup**

Basic Info | Real Gear | Reference Meter | Others | **channel**

setting channel pad

MultiFunction

Reverse Active 9

Forward Reactive 1

Reverse Reactive 1

Clock Pulse Error 7

Demand Cycle Error 8

Forward Active or other 9

☐ Mechanical meter channel

☒ PulseType:Negative=2、Positive=3

☒ Pulsing test sequence (active -> reactive) ☐ reactive Warmup

☐ Two current channel switchable

OK Cancel

Reactive pulse on the left side sensor, while active pulse on the right side sensor.

**System Setup**

Basic Info | Real Gear | Reference Meter | Others | **channel**

setting channel pad

MultiFunction

Reverse Active 1

Forward Reactive 9

Reverse Reactive 9

Clock Pulse Error 7

Demand Cycle Error 8

Forward Active or other 1

☐ Mechanical meter channel

☒ PulseType:Negative=2、Positive=3

☒ Pulsing test sequence (active -> reactive) ☐ reactive Warmup

☐ Two current channel switchable

OK Cancel

Active pulse test finish, will inform user to change sensor to reactive pulse.

**System Setup**

Basic Info | Real Gear | Reference Meter | Others | **channel**

setting channel pad

MultiFunction

Reverse Active 9

Forward Reactive 1

Reverse Reactive 1

Clock Pulse Error 7

Demand Cycle Error 8

Forward Active or other 9

☐ Mechanical meter channel

☒ PulseType:Negative=2、Positive=3

☒ Pulsing test sequence (active -> reactive)

☐ reactive Warmup

☐ Two current channel switchable

OK Cancel

#### 4.7. Change background photo

**System Setup**

Basic Info | Real Gear | Reference Meter | Others | **channel**

Device Setting

☐ Single Phase ☒ Three Phase

☐ Voltage Mutual Inductance

☐ Current Mutual Inductance

☒ Seperate Single Ouput A

Device Protocol IV.1

Device Serial No 0317031

Device Certificate No

Com of Source 1

Com of 485 1

positions 24

Gear Change Delay(s) 0

U/I Switch Delay 2

Check point Delay seconds 2

☒ support floating DA output (such like 0.025 mA)

Error Calculator

Protocol III192Hub

Digital 4

Meters 6

☒ Option of faster getting result

☒ Option of new type of device

comma-separated of list of first number of each error caculator device

☐ Allow Set S.T or C.T Pulse

☐ Catch Black Mark ☒ Auto ☐ Manual

☐ Raise voltage to Catch Mark(%U) 100

Client Infomation

**change background**

undefined

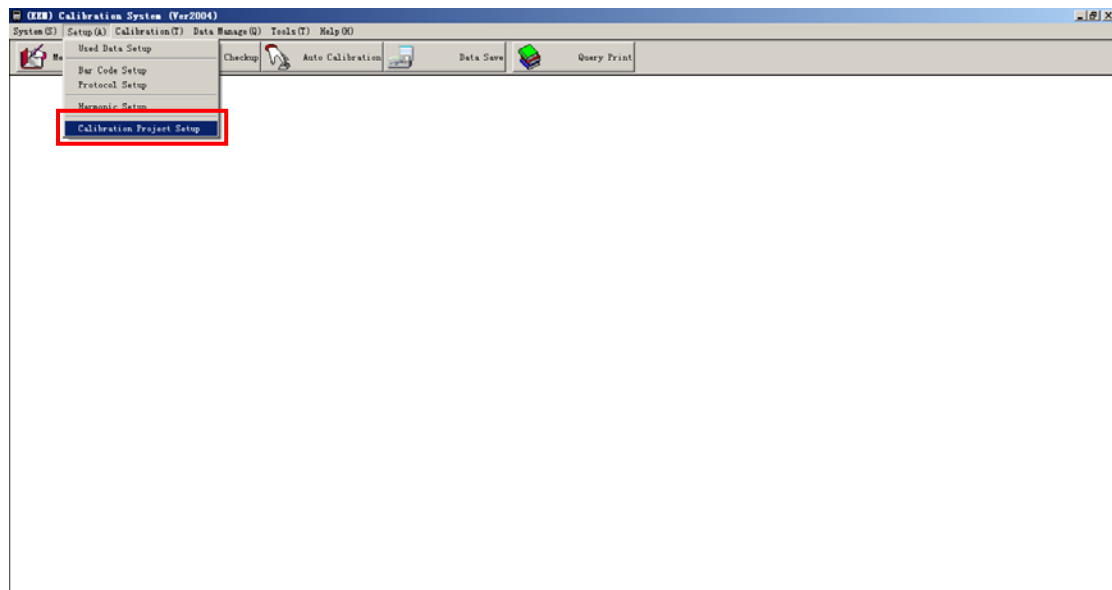
FLAT FILE OUTPUT:

c:\

browser

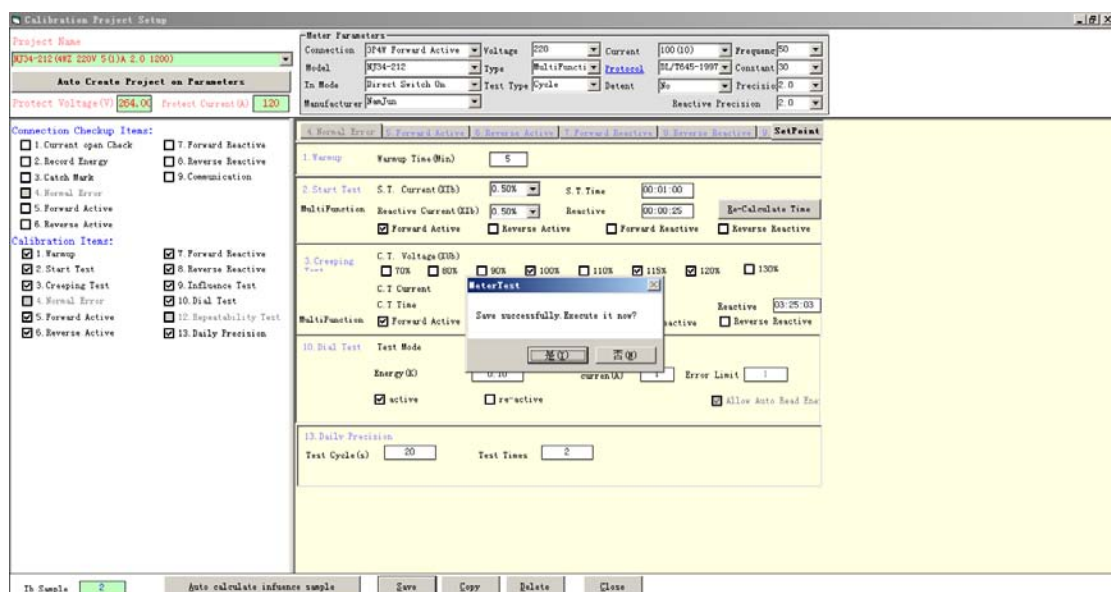
OK Cancel

## 5. Calibration project setup



### 5.1. Calibration setup main page

Input project name, protection voltage, protection current and click 'save' button.



## 5.2. Meter parameter input

Connection mode: 3p4w Forward active, 3p4w Forward reactive

3p3w Forward active, 3p3w Forward reactive

Single phase active, Single phase reverse active

Model: As per meter model

In Mode: Direct switch on

Manufacturer: As per meter manufacture

Voltage: Meter phase voltage, maximum 480V

Type: Mechanical, MechEle, Digital, Multi-function

Test type: First test / circle test (circle test means the meter failed the test at the first time and need to redo a second test)

Current: I<sub>max</sub>(I<sub>b</sub>), maximum 120A

Frequency: 45Hz~65Hz

Constant: pulse/Kwh

Precision: As per meter precision

Reactive precision: As per meter precision

## 5.3. Calibration Items

For Mechanical, MechEle, Digital meter type, the calibration item as follow,

#### Calibration Items:

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> 1. Warmup        | <input type="checkbox"/> 7. Forward Reactive               |
| <input checked="" type="checkbox"/> 2. Start Test    | <input type="checkbox"/> 8. Reverse Reactive               |
| <input checked="" type="checkbox"/> 3. Creeping Test | <input checked="" type="checkbox"/> 9. Influence Test      |
| <input type="checkbox"/> 4. Normal Error             | <input checked="" type="checkbox"/> 10. Dial Test          |
| <input type="checkbox"/> 5. Forward Active           | <input checked="" type="checkbox"/> 12. Repeatability Test |
| <input type="checkbox"/> 6. Reverse Active           | <input type="checkbox"/> 13. Daily Precision               |

For Multi-function meter type, the calibration item as follow,

#### Calibration Items:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> 1. Warmup         | <input checked="" type="checkbox"/> 7. Forward Reactive    |
| <input checked="" type="checkbox"/> 2. Start Test     | <input checked="" type="checkbox"/> 8. Reverse Reactive    |
| <input checked="" type="checkbox"/> 3. Creeping Test  | <input checked="" type="checkbox"/> 9. Influence Test      |
| <input type="checkbox"/> 4. Normal Error              | <input checked="" type="checkbox"/> 10. Dial Test          |
| <input checked="" type="checkbox"/> 5. Forward Active | <input checked="" type="checkbox"/> 12. Repeatability Test |
| <input checked="" type="checkbox"/> 6. Reverse Active | <input type="checkbox"/> 13. Daily Precision               |

##### 5.3.1. Test 1. Warm up

Warm up with rated voltage and Ib current.

Input the warm up time,

1. Warmup	Warmup Time (Min)	5
-----------	-------------------	---

##### 5.3.2. Test 2. Starting Test

Select the starting test current and click 'Re-Calculate Time' for auto calculation of test time. Or can manually input test time.

2. Start Test	S.T. Current (XIb)	0.50%	S.T. Time	00:39:24
MultiFunction	Reactive Current (XIb)	0.50%	Reactive	:
	<input type="checkbox"/> Forward Active	<input type="checkbox"/> Reverse Active	<input type="checkbox"/> Forward Reactive	<input type="checkbox"/> Reverse Reactive
				Re-Calculate Time

##### 5.3.3. Test 3. Creeping Test

Select the creeping test voltage, creeping test current, creeping test time. Or can manually input test time.

3. Creeping Test	C.T. Voltage (XUb)	<input type="checkbox"/> 70% <input type="checkbox"/> 80% <input type="checkbox"/> 90% <input type="checkbox"/> 100% <input type="checkbox"/> 110% <input type="checkbox"/> 115% <input checked="" type="checkbox"/> 120% <input type="checkbox"/> 130%					
	C.T Current	<input type="checkbox"/> 1/5 S.T. Current					
	C.T Time	<input checked="" type="checkbox"/> 5 Times S.T. Time		03:32:07	Reactive	03:32:07	
MultiFunction	<input type="checkbox"/> Forward Active	<input type="checkbox"/> Reverse Active	<input type="checkbox"/> Forward Reactive	<input type="checkbox"/> Reverse Reactive			

##### 5.3.4. Test 4. Normal Error test

This test is only available for Mechanical, Digital, MechEle meter type

Directly Click 'SetPoint' to go to test point setting page

4. Normal Error	5. Forward Active	6. Reverse Active	7. Forward Reactive	8. Reverse Reactive	9. SetPoint
-----------------	-------------------	-------------------	---------------------	---------------------	-------------

##### 5.3.5. Test 5~8. Forward /Reverse Active, Forward /Reverse Reactive test

This test is only available for Multifunction meter type

For example: Forward active test point setting, need to click '5.Forward Active' and then



4.Normal Error	<b>5.Forward Active</b>	6.Reverse Active	7.Forward Reactive	8.Reverse Reactive	9.	<b>SetPoint</b>
----------------	-------------------------	------------------	--------------------	--------------------	----	-----------------

No	Points	Times	TopLimit	BotLimit	SLimit	Sample	TopLimit*	BotLimit*

Select Testing Points

Current Range: 3P4W Forward Active 220V 100 (20)A

Re-define current and factor

No	Points																																																																																																															
	<table border="1"> <thead> <tr> <th>Points</th> <th colspan="6">Single Phase or Three Phase Together</th> </tr> <tr> <th></th> <th>1.0</th> <th>0.5</th> <th>0.25</th> <th>0.10</th> <th>0.05</th> <th>0.025</th> <th>0.0125</th> </tr> </thead> <tbody> <tr><td>Inss</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0.5Inss</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0.5(m+b)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2.5In</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2In</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1.5In</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>In</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0.5In</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0.2In</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0.1In</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0.05In</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0.02In</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Points	Single Phase or Three Phase Together							1.0	0.5	0.25	0.10	0.05	0.025	0.0125	Inss								0.5Inss								0.5(m+b)								2.5In								2In								1.5In								In								0.5In								0.2In								0.1In								0.05In								0.02In							
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Points	APhase Unbalanced		BPhase Unbalanced		CPhase Unbalanced																																																																																																											
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0.05In																																																																																																																
0.02In																																																																																																																

☒ Auto Calculate Sample  
In Sample 2
 ☐ Phase B and C is same with A
 

Clear

OK

Cancel

Select the test point by clicking the unit, after selection the test points is highlight in yellow. The number of the highlight yellow unit indicating the test sequence.

Poly phase test point,

Select Testing Points

Current Range: 3P4Forward Active 220V 100(20)A

Re-define current and factor

No	Points
1	I <sub>max</sub> (1.0)
2	I <sub>max</sub> (0.5L)
3	I <sub>max</sub> (0.5C)
4	I <sub>b</sub> (1.0)
5	I <sub>b</sub> (0.5L)
6	I <sub>b</sub> (0.5C)
7	0.1I <sub>b</sub> (1.0)
8	0.1I <sub>b</sub> (0.5L)
9	0.1I <sub>b</sub> (0.5C)
10	0.02I <sub>b</sub> (1.0)
11	0.02I <sub>b</sub> (0.5L)
12	0.02I <sub>b</sub> (0.5C)

Points	Single Phase or Three Phase Together						
	1.0	0.5L	0.5C	0.01	0.05	0.05L	0.05C
I <sub>max</sub>							
0.5I <sub>max</sub>							
0.5I <sub>max</sub>							
2.5I <sub>b</sub>							
2I <sub>b</sub>							
1.5I <sub>b</sub>							
I <sub>b</sub>							
0.5I <sub>b</sub>							
0.2I <sub>b</sub>							
0.1I <sub>b</sub>							
0.05I <sub>b</sub>							
0.02I <sub>b</sub>							

Points	APhase Unbalanced			BPhase Unbalanced			CPhase Unbalanced		
	1.0	0.5L	0.5C	1.0	0.5L	0.5C	1.0	0.5L	0.5C
I <sub>max</sub>									
0.5I <sub>max</sub>									
0.5I <sub>max</sub>									
2.5I <sub>b</sub>									
2I <sub>b</sub>									
1.5I <sub>b</sub>									
I <sub>b</sub>									
0.5I <sub>b</sub>									
0.2I <sub>b</sub>									
0.1I <sub>b</sub>									
0.05I <sub>b</sub>									
0.02I <sub>b</sub>									

☒ Auto Calculate Sample I<sub>b</sub> Scale 
☐ Phase B and C is same with A
 

Clear

OK

Cancel

### 5.3.6.2. Test point selection for unbalance phase

Unbalance test point, by selecting the 'Phase B and C is same with A', unbalance test point at phase A,B and C can be set simultaneously.

Select Testing Points

Current Range: 3P4W Forward Active 220V 100(20)A

Re-define current and factor

No	Points
1	I <sub>max</sub> (1.0)
2	I <sub>max</sub> (0.5L)
3	I <sub>max</sub> (0.5C)
4	I <sub>b</sub> (1.0)
5	I <sub>b</sub> (0.5L)
6	I <sub>b</sub> (0.5C)
7	0.1I <sub>b</sub> (1.0)
8	0.1I <sub>b</sub> (0.5L)
9	0.1I <sub>b</sub> (0.5C)
10	0.02I <sub>b</sub> (1.0)
11	0.02I <sub>b</sub> (0.5L)
12	0.02I <sub>b</sub> (0.5C)
13	API <sub>max</sub> (1.0)
14	API <sub>max</sub> (0.5L)
15	API <sub>b</sub> (1.0)
16	API <sub>b</sub> (0.5L)
17	AP0.02I <sub>b</sub> (1.0)
18	AP0.02I <sub>b</sub> (0.5L)
19	BPI <sub>max</sub> (1.0)
20	BPI <sub>max</sub> (0.5L)
21	BPI <sub>b</sub> (1.0)
22	BPI <sub>b</sub> (0.5L)
23	BP0.02I <sub>b</sub> (1.0)
24	BP0.02I <sub>b</sub> (0.5L)
25	CPI <sub>max</sub> (1.0)
26	CPI <sub>max</sub> (0.5L)
27	CPI <sub>b</sub> (1.0)
28	CPI <sub>b</sub> (0.5L)
29	CP0.02I <sub>b</sub> (1.0)
30	CP0.02I <sub>b</sub> (0.5L)

Points

Points	Single Phase or Three Phase Together							
	1.0	0.5L	0.5C	0.6L	0.6C	0.25L	0.25C	
I <sub>max</sub>	1	2	3					
0.5I <sub>max</sub>								
0.5I <sub>max</sub> (a-b)								
2.5I <sub>b</sub>								
2I <sub>b</sub>								
1.5I <sub>b</sub>								
I <sub>b</sub>	4	5	6					
0.5I <sub>b</sub>								
0.2I <sub>b</sub>								
0.1I <sub>b</sub>	7	8	9					
0.05I <sub>b</sub>								
0.02I <sub>b</sub>	10	11	12					

Points

Points	APhase Unbalanced			BPhase Unbalanced			CPhase Unbalanced		
	1.0	0.5L	0.5C	1.0	0.5L	0.5C	1.0	0.5L	0.5C
I <sub>max</sub>	13	14		19	20		25	26	
0.5I <sub>max</sub>									
0.5I <sub>max</sub> (a-b)									
2.5I <sub>b</sub>									
2I <sub>b</sub>									
1.5I <sub>b</sub>									
I <sub>b</sub>	15	16		21	22		27	28	
0.5I <sub>b</sub>									
0.2I <sub>b</sub>									
0.1I <sub>b</sub>									
0.05I <sub>b</sub>									
0.02I <sub>b</sub>	17	18		23	24		29	30	

☒ Auto Calculate Sample

I<sub>b</sub> Sample: 2

☒ Phase B and C is same with A

Clear OK Cancel

### 5.3.6.3. Test point clear(delete)

Delete by double clicking the target test point. Or click 'Clear' button to delete all test point.

Select Testing Points

Current Range: 3P4W Forward Active 220V 100(20)A

Re-define current and factor

No	Points
1	I <sub>max</sub> (1.0)
2	I <sub>max</sub> (0.5L)
3	I <sub>max</sub> (0.5C)
4	I <sub>b</sub> (1.0)
5	I <sub>b</sub> (0.5L)
6	I <sub>b</sub> (0.5C)
7	0.1I <sub>b</sub> (1.0)
8	0.1I <sub>b</sub> (0.5L)
9	0.1I <sub>b</sub> (0.5C)
10	0.02I <sub>b</sub> (1.0)
11	0.02I <sub>b</sub> (0.5L)
12	0.02I <sub>b</sub> (0.5C)
13	API <sub>max</sub> (1.0)
14	API <sub>max</sub> (0.5L)
15	API <sub>b</sub> (1.0)
16	API <sub>b</sub> (0.5L)
17	AP0.02I <sub>b</sub> (1.0)
18	AP0.02I <sub>b</sub> (0.5L)
19	BPI <sub>max</sub> (1.0)
20	BPI <sub>max</sub> (0.5L)
21	BPI <sub>b</sub> (1.0)
22	BPI <sub>b</sub> (0.5L)
23	BP0.02I <sub>b</sub> (1.0)
24	BP0.02I <sub>b</sub> (0.5L)
25	CPI <sub>max</sub> (1.0)
26	CPI <sub>max</sub> (0.5L)
27	CPI <sub>b</sub> (1.0)
28	CPI <sub>b</sub> (0.5L)
29	CP0.02I <sub>b</sub> (1.0)
30	CP0.02I <sub>b</sub> (0.5L)

Points

Points	Single Phase or Three Phase Together							
	1.0	0.5L	0.5C	0.6L	0.6C	0.25L	0.25C	
I <sub>max</sub>								
0.5I <sub>max</sub>								
0.5I <sub>max</sub> (a-b)								
2.5I <sub>b</sub>								
2I <sub>b</sub>								
1.5I <sub>b</sub>								
I <sub>b</sub>								
0.5I <sub>b</sub>								
0.2I <sub>b</sub>								
0.1I <sub>b</sub>								
0.05I <sub>b</sub>								
0.02I <sub>b</sub>								

Points

Points	APhase Unbalanced			BPhase Unbalanced			CPhase Unbalanced		
	1.0	0.5L	0.5C	1.0	0.5L	0.5C	1.0	0.5L	0.5C
I <sub>max</sub>									
0.5I <sub>max</sub>									
0.5I <sub>max</sub> (a-b)									
2.5I <sub>b</sub>									
2I <sub>b</sub>									
1.5I <sub>b</sub>									
I <sub>b</sub>									
0.5I <sub>b</sub>									
0.2I <sub>b</sub>									
0.1I <sub>b</sub>									
0.05I <sub>b</sub>									
0.02I <sub>b</sub>									

☒ Auto Calculate Sample

I<sub>b</sub> Sample: 2

☐ Phase B and C is same with A

Clear OK Cancel

#### 5.3.6.4. Test point Re-define

The test point selection can be customize by clicking the 'Re-define current and factor' button.

Select Testing Points  
Current Range: 3P4W Forward Active 220V 100(20)A

Re-define current and factor

No	Points
1	1.0
2	0.5L
3	0.5C
4	0.8L
5	0.8C
6	0.25L
7	0.25C

Points	Aphase Unbalanced			Bphase Unbalanced			Cphase Unbalanced		
	1.0	0.5L	0.5C	1.0	0.5L	0.5C	1.0	0.5L	0.5C
1									
2									
3									
4									
5									
6									
7									

☒ Auto Calculate Sample  
Ib Sample: 2

☐ Phase B and C is same with A

Clear OK Cancel

Set used current and factor

used current: Reload default

No	1	2	3	4	5	6
Current	Imax	0.5Imax	0.5(m-b)	2.5Ib	2Ib	1.5Ib

used factor:

	AllPhase1	AllPhase2	AllPhase3	AllPhase4	AllPhase5	AllPhase6
Factor	1.0	0.5L	0.5C	0.8L	0.8C	0.25L

OK Cancel

#### 5.3.6.5. Auto calculate sample (pulse number)

This indicates the sampling pulses at Ib current load point. Numbers of Imax or other current load point sampling pulses will automatically calculate by the Ib/Imax ratio.

For example, with a tested meter Imax/Ib of 10(100)A, the Ib to Imax ratio is 10x. When at Ib sampling pulse set to 2, then at the 0.5 Imax load point sampling pulse will be 10, and Imax load point sampling pulse will be 20.

Select Testing Points

Current Range: 3P4W Forward Active 220V 100(20)A

Re-define current and factor

No	Points	Points	Single Phase or Three Phase Together						
			1.0	0.5L	0.5C	0.8L	0.8C	0.25L	0.25C
		Test							
		0.5Imax							
		0.5Imin							
		2.5Ib							
		2Ib							
		1.5Ib							
		Ib							
		0.5Ib							
		0.2Ib							
		0.1Ib							
		0.05Ib							
		0.02Ib							

Points	APhase Unbalanced			BPhase Unbalanced			CPhase Unbalanced		
	1.0	0.5L	0.5C	1.0	0.5L	0.5C	1.0	0.5L	0.5C
Test									
0.5Imax									
0.5Imin									
2.5Ib									
2Ib									
1.5Ib									
Ib									
0.5Ib									
0.2Ib									
0.1Ib									
0.05Ib									
0.02Ib									

☒ Auto Calculate Sample  
 2b Sample

Phase B and C is same with A

Clear OK Cancel

This will show on the next steps after clicking 'ok'.

Calibration Project Setup

Project Name:

Auto Create Project on Parameters

Protect Voltage(V):  Protect Current(A):

Connection: 3P4W Forward Active Voltage: 220 Current: 100(10) Frequency: 50

Model: KPM-212 Type: MultiFunction Protocol: IEC61010-1997 Constant: 50

In Mode: Direct Switch On Test Type: Cycle Detent: No Precision: 0.0

Manufacturer: Hainan Reactive Precision: 0.0

Connection Checkup Items:

- ☐ 1. Current open Check
- ☐ 2. Record Energy
- ☐ 3. Catch Mark
- ☐ 4. Normal Error
- ☐ 5. Forward Active
- ☐ 6. Reverse Active
- ☐ 7. Forward Reactive
- ☐ 8. Reverse Reactive
- ☐ 9. Communication

Calibration Items:

- ☒ 1. Warmup
- ☒ 2. Start Test
- ☒ 3. Creeping Test
- ☒ 4. Normal Error
- ☒ 5. Forward Active
- ☒ 6. Reverse Active
- ☒ 7. Forward Reactive
- ☒ 8. Reverse Reactive
- ☒ 9. Influence Test
- ☒ 10. Dial Test
- ☒ 12. Repeatability Test
- ☒ 13. Daily Precision

No	Points	Times	TopLimit	BotLimit	SLimit	Sample	TopLimit*	BotLimit*
1	Imax(1.0)	2	1.000	-1.000		20		
2	Ib(0.0)	2	1.000	-1.000		2		

2b Sample  Auto calculate influence sample Save Copy Delete Close

4. Normal Error								
No	Points	Errors	TopLimit	BotLimit	SLimit	Pulse(s)	TopLimit*	BotLimit*
1	Imax (1.0)	2	1.000	-1.000		20		
2	Imax (0.5L)	2	1.000	-1.000		20		
3	Imax (0.5C)	2	1.000	-1.000		20		
4	0.5Imax (1.0)	2	1.000	-1.000		10		
5	0.5Imax (0.5L)	2	1.000	-1.000		10		
6	0.5Imax (0.5C)	2	1.000	-1.000		10		

#### 5.3.6.6. Test point character

Calibration Project Setup

Project Name: **40 (10)**

Auto Create Project on Parameters

Protect Vols: 0V **388.00** Protect Curr: 0A **100**

Manufacturer: **DM Power**

Meter Parameters:

Varing: **2P4W Forward Active** Voltage: **540** Current: **100 (10)** active accuracy: **1.0**

Model: **DigitalMeter** Type: **Digital** Constant: **1000** reactive: **1.0**

Conn. mode: **Direct Switch On** Test Type: **Cycle** Frequency: **60**

Connection Checkup Items:

☐ 1. Relay test ☐ 9. Communication

Calibration Items:

☒ 1. Runup ☐ 7. Forward Reactive

☐ 2. Start Test ☐ 8. Reverse Reactive

☐ 3. Creeping Test ☐ 9. Influence Test

☒ 4. Normal Error ☒ 10. Bid. Test

☐ 5. Forward Active ☒ 12. Repeatability Test

☐ 6. Reverse Active ☐ 13. Daily Precision

No	Points	Errors	TopLimit	BotLimit	SLimit	Pulses(s)	TopLimit(*)	BotLimit(*)
1	I <sub>max</sub> (I 0)	2	1.000	-1.000		20		
2	I <sub>max</sub> (0 SC)	2	1.000	-1.000		20		
3	I <sub>max</sub> (0 SL)	2	1.000	-1.000		20		
4	0.5I <sub>max</sub> (I 0)	2	1.000	-1.000		10		
5	0.5I <sub>max</sub> (0 SL)	2	1.000	-1.000		10		
6	0.5I <sub>max</sub> (0 SC)	2	1.000	-1.000		10		
7	I <sub>th</sub> (I 0)	2	1.000	-1.000		2		
8	I <sub>th</sub> (0 SL)	2	1.000	-1.000		2		
9	I <sub>th</sub> (0 SC)	2	1.000	-1.000		2		
10	0.1I <sub>th</sub> (I 0)	2	1.000	-1.000		1		
11	0.1I <sub>th</sub> (0 SL)	2	1.000	-1.000		1		
12	0.1I <sub>th</sub> (0 SC)	2	1.000	-1.000		1		
13	0.05I <sub>th</sub> (I 0)	2	1.000	-1.000		1		
14	0.05I <sub>th</sub> (0 SL)	2	1.000	-1.000		1		
15	0.05I <sub>th</sub> (0 SC)	2	1.000	-1.000		1		
16	AFI <sub>max</sub> (I 0)	2	1.500	-1.500		20		
17	AFI <sub>max</sub> (0 SL)	2	1.500	-1.500		20		
18	AFI <sub>max</sub> (0 SC)	2	1.500	-1.500		20		
19	AFI <sub>0.5I<sub>max</sub></sub> (I 0)	2	1.500	-1.500		10		
20	AFI <sub>0.5I<sub>max</sub></sub> (0 SL)	2	1.500	-1.500		10		
21	AFI <sub>0.5I<sub>max</sub></sub> (0 SC)	2	1.500	-1.500		10		
22	AFI <sub>th</sub> (I 0)	2	1.500	-1.500		2		
23	AFI <sub>th</sub> (0 SL)	2	1.500	-1.500		2		
24	AFI <sub>th</sub> (0 SC)	2	1.500	-1.500		2		
25	AFI <sub>0.1I<sub>th</sub></sub> (I 0)	2	1.500	-1.500		1		
26	AFI <sub>0.1I<sub>th</sub></sub> (0 SL)	2	1.500	-1.500		1		
27	AFI <sub>0.1I<sub>th</sub></sub> (0 SC)	2	1.500	-1.500		1		
28	AFI <sub>0.05I<sub>th</sub></sub> (I 0)	2	1.500	-1.500		1		
29	AFI <sub>0.05I<sub>th</sub></sub> (0 SL)	2	1.500	-1.500		1		
30	AFI <sub>0.05I<sub>th</sub></sub> (0 SC)	2	1.500	-1.500		1		
31	RFI <sub>max</sub> (I 0)	2	1.500	-1.500		20		
32	RFI <sub>max</sub> (0 SL)	2	1.500	-1.500		20		
33	RFI <sub>max</sub> (0 SC)	2	1.500	-1.500		20		
34	RFI <sub>0.5I<sub>max</sub></sub> (I 0)	2	1.500	-1.500		10		

Save Copy Delete Close

No: Test point sequence

Points: Current load point with fix voltage

Errors: Number of error sample taken at each test point to calculate the average error

TopLimit: Upper limit of meter accuracy class.

BotLimit: Lower limit of meter accuracy class.

SLimit:

Pulses(s): Number of pulse sample to calculate an error.

TopLimit(\*):

BotLimit(\*):

### 5.3.6.7. TopLimit , BotLimit, SLimit

TopLimit represent the positive error limit of the meter whereas BotLimit is the negative error limit. SLimit represent the standard deviation limit of each error of the meter.

Usually the top limit and bottom limit is automatically set according to the meter precision when after the test points have been choose. But when testing the test point that is out of the meter normal range, the error limits have to be redefined by the user, for exampling like testing the very small current load.

**Calibration Project Setup**

Project Name: **Test Static**

Auto Create Project on Parameters

Protect Voltage(V): **254.00** Protect Current(A): **100**

Connection: **3P4W Forward Active** Voltage: **200** Current: **100 (1.0)** Frequency: **50**

Model: **KJ34-212** Type: **MultiFunction** Protocol: **DL/T845-1997** Constant: **50**

In Mode: **Direct Switch On** Test Type: **Cycle** Detent: **No** Precision: **2.0**

Manufacturer: **HanJin** Reactive Precision: **2.0**

Connection Checkup Items:

- ☐ 1. Current open Check
- ☐ 2. Record Energy
- ☐ 3. Catch Mark
- ☐ 4. Normal Error
- ☐ 5. Forward Active
- ☐ 6. Reverse Active
- ☐ 7. Forward Reactive
- ☐ 8. Reverse Reactive
- ☐ 9. Communication

Calibration Items:

- ☒ 1. Warning
- ☒ 2. Start Test
- ☒ 3. Creeping Test
- ☐ 4. Normal Error
- ☒ 5. Forward Active
- ☒ 6. Reverse Active
- ☒ 7. Forward Reactive
- ☒ 8. Reverse Reactive
- ☒ 9. Influence Test
- ☒ 10. Dial Test
- ☒ 12. Repeatability Test
- ☒ 13. Daily Precision

No	Points	Times	TopLimit	BotLimit	SLimit	Sample	TopLimit	BotLimit
1	1m(1.0)	2	2.000	-2.000		20		
2	1h(1.0)	2	2.000	-2.000		2		

1h Sample: **2** Auto calculate influence sample

Save Copy Delete Close

### 5.3.6.8. Meter that have two limit

With meters that have two different limit at active and reactive error.

**Calibration Project Setup**

Project Name: **Test Static**

Auto Create Project on Parameters

Protect Voltage(V): **254.00** Protect Current(A): **100**

Connection: **3P4W Forward Active** Voltage: **200** Current: **100 (1.0)** Frequency: **50**

Model: **KJ34-212** Type: **MultiFunction** Protocol: **DL/T845-1997** Constant: **50**

In Mode: **Direct Switch On** Test Type: **Cycle** Detent: **No** Precision: **2.0**

Manufacturer: **HanJin** Reactive Precision: **2.0**

Connection Checkup Items:

- ☐ 1. Current open Check
- ☐ 2. Record Energy
- ☐ 3. Catch Mark
- ☐ 4. Normal Error
- ☐ 5. Forward Active
- ☐ 6. Reverse Active
- ☐ 7. Forward Reactive
- ☐ 8. Reverse Reactive
- ☐ 9. Communication

Calibration Items:

- ☒ 1. Warning
- ☒ 2. Start Test
- ☒ 3. Creeping Test
- ☐ 4. Normal Error
- ☒ 5. Forward Active
- ☒ 6. Reverse Active
- ☒ 7. Forward Reactive
- ☒ 8. Reverse Reactive
- ☒ 9. Influence Test
- ☒ 10. Dial Test
- ☒ 12. Repeatability Test
- ☒ 13. Daily Precision

No	Points	Times	TopLimit	BotLimit	SLimit	Sample	TopLimit	BotLimit
1	1m(1.0)	2	2.000	-2.000		20		
2	1h(1.0)	2	2.000	-2.000		2		

1h Sample: **2** Auto calculate influence sample

Save Copy Delete Close

The top limit and bottom limit will automatically input accordingly. This require user to select meter type to Multi-Function.

**Calibration Project Setup**

Project Name:  Test Status:  Auto Create Project on Parameters

Protect Voltage(V):  254.00 Protect Current(A):  100

Connection:  5F49 Forward Active Voltage:  500 Current:  100 (10) Frequency:  50

Model:  KJ54-212 Type:  MultiFunction TestType:  TestType:  Cycle Detent:  No Precision:  0.0

In Mode:  Direct Switch On Manufacturer:  WanJun Reactive Precision:  0.0

Connection Checkup Items:

- ☐ 1. Current open Check
- ☐ 2. Record Energy
- ☐ 3. Catch Mark
- ☐ 4. Normal Error
- ☐ 5. Forward Active
- ☐ 6. Reverse Active
- ☐ 7. Forward Reactive
- ☐ 8. Reverse Reactive
- ☐ 9. Communication

Calibration Items:

- ☒ 1. Warmup
- ☒ 2. Start Test
- ☒ 3. Creeping Test
- ☒ 4. Normal Error
- ☒ 5. Forward Active
- ☒ 6. Reverse Active
- ☒ 7. Forward Reactive
- ☒ 8. Reverse Reactive
- ☒ 9. Influence Test
- ☒ 10. Dial Test
- ☒ 12. Repeatability Test
- ☒ 13. Daily Precision

No	Points	Times	TopLimit	BotLimit	SLimit	Sample	TopLimit*	BotLimit*
1	100 (1.0)	2	2.000	-2.000		20		
2	10 (1.0)	2	2.000	-2.000		2		

10 Sample:  2 Auto calculate influence sample Save Copy Delete Close

After selecting multifunction, the test points of the active and reactive error have to set independently at chart '5.Forward Active', '6. Reverse Active (When the meter require a reverse energy test)', '7Forward Reactive', '8.Reverse Reactive'.

**Calibration Project Setup**

Project Name:  Test Status:  Auto Create Project on Parameters

Protect Voltage(V):  254.00 Protect Current(A):  100

Connection:  5F49 Forward Active Voltage:  500 Current:  100 (10) Frequency:  50

Model:  KJ54-212 Type:  MultiFunction TestType:  TestType:  Cycle Detent:  No Precision:  0.0

In Mode:  Direct Switch On Manufacturer:  WanJun Reactive Precision:  0.0

Connection Checkup Items:

- ☐ 1. Current open Check
- ☐ 2. Record Energy
- ☐ 3. Catch Mark
- ☐ 4. Normal Error
- ☐ 5. Forward Active
- ☐ 6. Reverse Active
- ☐ 7. Forward Reactive
- ☐ 8. Reverse Reactive
- ☐ 9. Communication

Calibration Items:

- ☒ 1. Warmup
- ☒ 2. Start Test
- ☒ 3. Creeping Test
- ☒ 4. Normal Error
- ☒ 5. Forward Active
- ☒ 6. Reverse Active
- ☒ 7. Forward Reactive
- ☒ 8. Reverse Reactive
- ☒ 9. Influence Test
- ☒ 10. Dial Test
- ☒ 12. Repeatability Test
- ☒ 13. Daily Precision

No	Points	Times	TopLimit	BotLimit	SLimit	Sample	TopLimit*	BotLimit*
1	100 (1.0)	2	2.000	-2.000		20		
2	10 (1.0)	2	2.000	-2.000		2		

10 Sample:  2 Auto calculate influence sample Save Copy Delete Close

### 5.3.7. Modify of selected test point

This can be done by directly input test point.

**Calibration Project Setup**

Project Name: **Test Static**

Auto Create Project on Parameters

Protect Voltage(V): **254.00** Protect Current(A): **100**

Water Parameters:

Connection: **3P4W Forward Active** Voltage: **200** Current: **100 (1.0)** Frequency: **50**

Model: **KJ34-212** Type: **MultiFunction** Protocol: **DL/2645-1997** Constant: **50**

In Mode: **Direct Switch On** Test Type: **Cycle** Detent: **No** Precision: **0.0**

Manufacturer: **VanJun** Reactive Precision: **0.0**

Connection Checkup Items:

☐ 1. Current open Check ☐ 7. Forward Reactive

☐ 2. Record Energy ☐ 8. Reverse Reactive

☐ 3. Catch Work ☐ 9. Communication

☐ 4. Normal Error

☐ 5. Forward Active

☐ 6. Reverse Active

Calibration Items:

☒ 1. Range ☒ 7. Forward Reactive

☒ 2. Start Test ☒ 8. Reverse Reactive

☒ 3. Creeping Test ☒ 9. Influence Test

☐ 4. Normal Error ☒ 10. Bid Test

☒ 5. Forward Active ☒ 12. Reproducibility Test

☒ 6. Reverse Active ☒ 13. Daily Precision

No	Points	Times	TopLimit	BotLimit	Limit	Sample	TopLimit	BotLimit
1	Ib(1.0)	2	2.000	-2.000		20		
2	Ib(1.0)	2	2.000	-2.000		2		

Tab Sample: **2** Auto calculate influence sample **Save Copy Delete Close**

### 5.3.8. Test 9. Influence test

The influence test setting is hidden in the '9.' button

4. Normal Error 5. Forward Active 6. Reverse Active 7. Forward Reactive 8. Reverse Reactive **9. SetPoint**

4. Normal Error 5. Forward Active 6. Reverse Active 7. Forward Reactive 8. Reverse Reactive 9. Influence

No	Name	IsTest	Compare	Connection	Points	Vol (XUb)
1	Voltage Influence	Y	1	3P4W Forward Active	Ib(1.0)	1.0
2	Normal Condition					1.0
3	Voltage Influence					
4	Frequency Influence					
5	Harmonic Influence					
6	Converse Influence					
7	Slope Influence					
8	Unbalanced Voltage					
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

Voltage influence/ Frequency influence/Harmonic influence setting



No	Name	IsTest	Compare	Connection	Points	Vol(XUb)	
1	Voltage Influence	Y		1 3P4W Forward Active	Ib(1.0)	0.9	
2	Frequency Influence	Y		1 3P4W Forward Active	Ib(1.0)	1.0	
3	Harmonic Influence	Y		1 3P4W Forward Active	Ib(1.0)	1.0	

No	Vol(XUb)	Fre(Hz)	Harmonic	LeanAngle	IsConvers	VolSel	CurSel	ErrLimit	ChgLimit
1	0.9	50	No	0	N	ABC	ABC	2.000	3.00
2	1.0	51	No	0	N	ABC	ABC	2.000	3.00
3	1.0	50	5Times(10%Un 40%Io)	0	N	ABC	ABC	2.000	3.00

No	Harmonic	LeanAngle	IsConvers	VolSel	CurSel	ErrLimit	ChgLimit	Sample	Times
1	No	0	N	ABC	ABC	2.000	3.000	2	
2	No	0	N	ABC	ABC	2.000	3.000	2	
3	5Times(10%Un 40%Io)	0	N	ABC	ABC	2.000	3.000	2	

Name: Influence factor

Is Test: Y/test, N/not test

Compare:

Connection: Meter wiring

Points: Current load point, test current

Vol(Xub): Test voltage

Fre(Hz): Test frequency

Harmonic: Injected harmonic

Lean Angle:

Is Convers:

VolSel:

CurSel:

ErrLimit:

ChgLimit:

Sample: Number of pulse for calculating each error.

Times: Number of error samples to save to report

ACur(XIB):

BCur(XIB):

CCur(XIb):

AAngle:

Bangle:

Cangle:

### 5.3.9. Test 10. Dial test

There are four dial test mode for selection.

#### 5.3.9.1. Pulse walk

10. Dial Test
Test Mode
Pulse Walk

Energy(K)
0.10
current(A)
1
Error Limit
1

☒ active
☐ re-active
☒ Allow Auto Read Error

#### 5.3.9.2. Energy walk(reference meter)

10. Dial Test Test Mode **Energy Walk(Reference Meter)**

Energy (K)  curren (A)  Error Limit

☒ active ☐ re-active ☒ Allow Auto Read Ene

#### 5.3.9.3. Time walk

10. Dial Test Test Mode **Time Walk**

Time (Min)  curren (A)  Error Limit

☒ active ☐ re-active ☒ Allow Auto Read Ene

#### 5.3.9.4. Energy walk(Head meter)

10. Dial Test Test Mode **Energy Walk(Head Meter)**

Energy (K)  curren (A)  Error Limit

☒ active ☐ re-active ☒ Allow Auto Read Ene

#### 5.4. Test 12. Repeatability test

12. Repeatability Test ☒ Below as same

Sort No	Check Point	y/n	Samples	Rounds	TopErr	BotErr	Seconds
1	Ib(1.0)	y	12	5	1.0	-1.0	300
2	Ib(1.0)	y	12	5	1.0	-1.0	300
3	Ib(1.0)	y	12	5	1.0	-1.0	300
4	Ib(1.0)	y	12	5	1.0	-1.0	300

Check point: test current load point

y/n: select to test or not test, y is test, n is not test

Samples: number of error to take in the test

Rounds: pulse number to take at each error

TopErr: top limit of the test

BotErr: bottom limit of the test

Seconds: waiting time between each sample

For example:

Sort No	Check Point	y/n	Samples	Rounds	TopErr	BotErr	Seconds
1	Ib(1.0)	y	12	5	1.0	-1.0	300

This means at each 300 seconds, will takes an error sample, and this sample will take 5 pulses circle to make. The whole process will repeat 12 times. So the total time will be 300's x12=3600's.

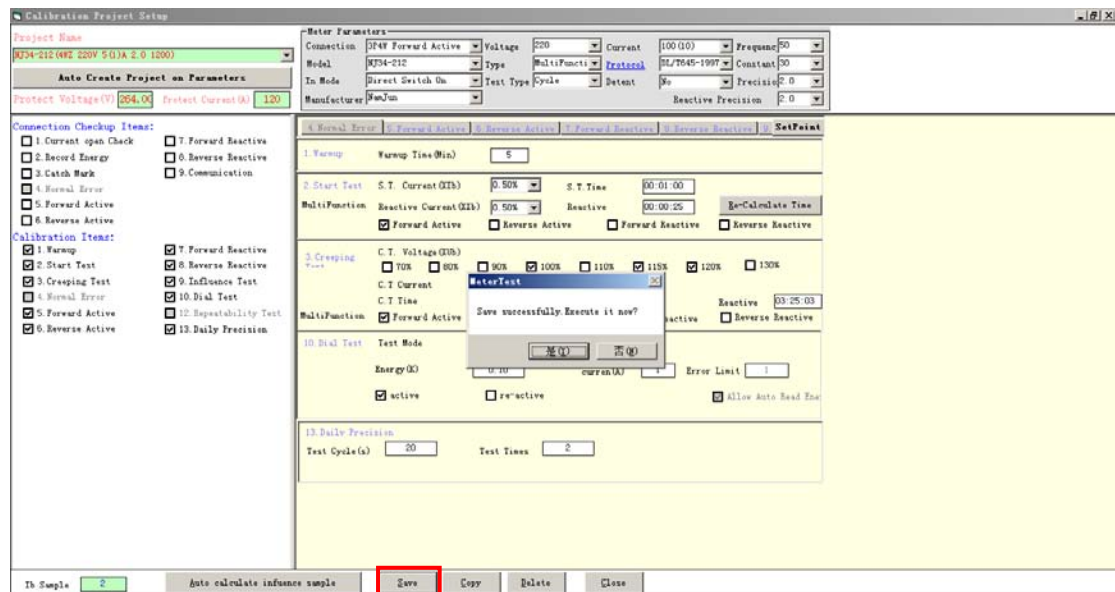
#### 5.5. Test 13. Daily precision

13. Daily Precision Test Cycle(s)  Test Times

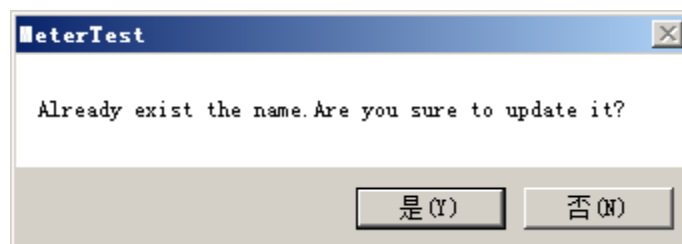
Test Cycles(s): Number of time base pulse to take for calculating one time clock error.

Test Time: Number of error to save to the report.

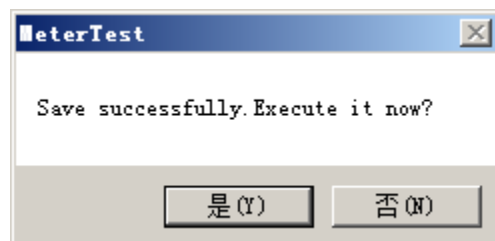
- 5.6. Save the calibration project setup.  
By clicking the 'Save' button.



Click 'Y' button to continue.



Click 'Y' button to continue.



6. Meter data input (for administrator mode)  
After saving the project, next will be the meter number input page.  
Input meter serial number and meter number by hand or use bar code scanner. Click 'save' button.  
Bar code scanner, software support all of the cable bound or blue tooth barcode scanner.

**Be attention:** When go back to the previous page and changing any setting at the calibration project, need to click 'Replace' button to update the information and input serial number and meter number again.

InputNo

Auto SerialNo    Auto MeterNo    Add Pre-SerialNo    Add Pre-MeterNo

No.	SerialNo	MeterNo	BarCode	TesterNo	PulseType	Constant	Model	Manufacturer	Protocol	SerialDate	TestUnit
1					Negative	30imp/M <sup>2</sup> ·h	KJ34-212	SanJun	DL/T645-1997	2007	Unit 1
2					Negative	30imp/M <sup>2</sup> ·h	KJ34-212	SanJun	DL/T645-1997	2007	Unit 1
3					Negative	30imp/M <sup>2</sup> ·h	KJ34-212	SanJun	DL/T645-1997	2007	Unit 1
4					Negative	30imp/M <sup>2</sup> ·h	KJ34-212	SanJun	DL/T645-1997	2007	Unit 1
5					Negative	30imp/M <sup>2</sup> ·h	KJ34-212	SanJun	DL/T645-1997	2007	Unit 1
6					Negative	30imp/M <sup>2</sup> ·h	KJ34-212	SanJun	DL/T645-1997	2007	Unit 1

Connection: ☐ RF4 Forward Active    Voltage:  200    Current:  100.000    Frequency:  50

In Mode:  Direct Switch On    Test Type:  Cycle    Detent:  0    Precision:  0.0    Reactive Precision:  0.0

Click 'Y' button to continue.

System

6 valid meter, continue?

## 7. Meter data input (for operator mode)

(KEM) Calibration System (Ver2004)

System(S)    Setup(A)    Calibration(C)    Data Manage(M)    Tools(T)    Help(H)

Select meter type:



5. Forward Active

Basic Parameters: 3P4W Forward Active[220V 10A] 2.0 30 Protect Value: 264V 100A

☐ Single Step

5. Forward Active Points:

☐ Manual Select Stop Manual

☐ Hold voltage on while down source

No	Points
1	I <sub>max</sub> (1.0)
2	I <sub>b</sub> (1.0)

Results: ☒ Adjust TimePassed: 00:04:36

No	Error1	Error2	Error3	Average	Smax	Error4	Er
1	-1.5670	-1.5370		-1.5520			
2	-1.3260	-1.3160		-1.3210			
3	-1.5880	-1.5930		-1.5905			
4	-0.8650	-0.8450		-0.8550			
5	-1.0660	-0.9520		-1.0090			
6	-2.9160	-2.9030		-2.9095			

Monitor: Reference meter's constant is 100000000 C

	Voltage	Current	P. Factor	Fre.	A. Power	R. Power
A	219.987	10.0056	0.99979	49.995	2200.65	45.0421
B	219.970	9.99791	0.99998	49.995	2199.22	10.1518
C	219.968	9.99286	1.00000	49.995	2198.11	1.16549

### 8.1. Test field view modify

Changing the high of the row by right click of the mouse,

Parameters: TimePassed:

No	Current	Energy(kWh)	S.Energy	E.Energy	EnergyErr.(%)	Pulses	PulseErr.(%)	Con.	ErrLimit
1	100.00	1							1
2	100.00	1							1
3	100.00	1							1
4	100.00	1							1
5	100.00	1							1
6	100.00	1							1

行高=180  
行高=240  
行高=300  
行高=360

Parameters: TimePassed:

No	Current	Energy(kWh)	S.Energy	E.Energy	EnergyErr.(%)	Pulses	PulseErr.(%)	Con.	ErrLimit
1	100.00	1							1
2	100.00	1							1
3	100.00	1							1
4	100.00	1							1
5	100.00	1							1
6	100.00	1							1

行高=180  
行高=240  
行高=300  
行高=360

## 8.2. Test process monitoring

By clicking the small binocular icon, can monitor the test data.

5. Forward Active

Basic Parameters: 3P4W Forward Active[220V 10A] 2.0 30

Protect Value: 264V 100A

☐ Single Step

Test Sinterie

1. Warmup

2. Start Test

3. Creeping Test

5. Forward Active

6. Reverse Active

7. Forward Reactive

8. Reverse Reactive

9. Influence Test

10. Dial Test

13. Clock Precision

5. Forward Active Points:

☐ Manual Select
 

Stop Manual

☐ Hold voltage on while down source
 

No	Points
1	I <sub>max</sub> (1.0)
2	I <sub>b</sub> (1.0)

Results: ☒ Adjust TimePassed: 00:04:36

No	Error1	Error2	Error3	Average	Smax	Error4	Er
1	-1.5670	-1.5370		-1.5520			
2	-1.3260	-1.3160		-1.3210			
3	-1.5880	-1.5930		-1.5905			
4	-0.8650	-0.8450		-0.8550			
5	-1.0660	-0.9520		-1.0090			
6	-2.9160	-2.9030		-2.9095			

Monitor: Reference meter's constant is 100000000

	Voltage	Current	P.Factor	Fre.	A.Power	R.Power
A	219.987	10.0056	0.99979	49.995	2200.65	45.0421
B	219.970	9.99791	0.99998	49.995	2199.22	10.1518
C	219.968	9.99286	1.00000	49.995	2198.11	1.16549

Error View

Select item: 5. Forward Active

☐ Smax
 ☒ Average
 ☐ Error

Points	1	2	3	4	5	6
I <sub>max</sub> (1.0)	-0.0550	0.6480	-0.9650	-0.6975	-0.7200	-0.4730
I <sub>b</sub> (1.0)	-1.8250	-1.3867	-1.6407	-0.8630	-1.0097	-2.7630
S.T.Con						
C.T.Con						
V.T.Con						

Error View						
Select item:	5.Forward Active					<input type="radio"/> Smax <input checked="" type="radio"/> Average <input type="radio"/> Error
Points	1	2	3	4	5	6
Imax (1.0)	-0.055C	-0.848C	-0.965C	-0.6975	-0.720C	-0.473C
Ib (1.0)	-1.8417	-1.434C	-1.8587	-0.868C	-0.9957	-2.7727
S.T.Con						
C.T.Con						
W.T.Con						

### 8.3. Single step test

If select the single step, the test will only run on the one selected item.

Current Select Item:5.Forward Active

Basic Parameters:3P4W Forward Active[220V 10A] 2.0

☒ Single Step

Test Sintie

1. Warmup  
2. Start Test  
3. Creeping Test  
5. Forward Active  
6. Reverse Active  
7. Forward Reactive  
8. Reverse Reactive  
9. Influence Test  
10. Dial Test  
13. Clock Precisio

5.Forward ActivePoints:

☐ Manual Select

Stop Manual

☐ Hold voltage on while down source

No	Points
1	Imax (1.0)
2	Ib (1.0)

### 8.4. Repeat test if the test point is failed.

By using the Manual Select function to repeat the test which is previously failed. Here is how to start and to stop manual test.

After error test was completed or stop, selecting 'Manual select' will repeat run once user click on a test point, and can change to any other test point by the user at any time by clicking on the targeted test point. Exit the manual test by click 'Stop Manual'. The previously failed report will be over write and not show in the test report.

Current Select Item:5.Forward Active

Basic Parameters:3P4W Forward Active[220V 10A] 2.0

☐ Single Step

Test Sintie

1. Warmup  
2. Start Test  
3. Creeping Test  
5. Forward Active  
6. Reverse Active  
7. Forward Reactive  
8. Reverse Reactive  
9. Influence Test  
10. Dial Test  
13. Clock Precisio

5.Forward ActivePoints:

☐ Manual Select

Stop Manual

☐ Hold voltage on while down source

No	Points
1	Imax (1.0)
2	Ib (1.0)



### 8.5. Hold voltage on while down source

When changing between each test point, the voltage remaining the same.

Current Select Item: 5. Forward Active

Basic Parameters: 3P4W Forward Active [220V 10A] 2.0

☐ Single Step

Test Sinter

- 1. Warmup
- 2. Start Test
- 3. Creeping Test
- 5. Forward Active
- 6. Reverse Active
- 7. Forward Reactive
- 8. Reverse Reactive
- 9. Influence Test
- 10. Dial Test
- 13. Clock Precision

5. Forward Active Points:

☐ Manual Select Stop Manual

☐ Hold voltage on while down source

No	Points
1	I <sub>max</sub> (1.0)
2	I <sub>b</sub> (1.0)

### 8.6. Dial test(Energy walk- reference meter mode)

Input the meter start energy at the beginning of test.

Record Start Energy

No	E. Begin	E. End	No	E. Begin	E. End
1	2.01		4	2.01	
2	2.02		5	2.02	
3	2.01		6	2.02	

Communication State Information

☐ skip typing check

Same ↓ OK

Input the meter start energy at the end of test.

No	E. Begin	E. End	No	E. Begin	E. End
1	2.01	3	4	2.01	3
2	2.02	3	5	2.02	3
3	2.01	3	6	2.02	3

Communication State Information

☐ skip typing check

Fixed Number Same ↓ OK

#### Dial test result

No	Current	Energy(kWh)	S.Energy	E.Energy	EnergyErr.(%)	Pulses	PulseErr.(%)	Con.	ErrLimit
1	100.00	1	1	2.01	1.000	31	3.333	Fail	1
2	100.00	1	1	2.01	1.000	30	0.000	Pass	1
3	100.00	1	1	2.01	1.000	30	0.000	Pass	1
4	100.00	1	1	2.01	1.000	30	0.000	Pass	1
5	100.00	1	1	2.01	1.000	30	0.000	Pass	1
6	100.00	1	1	2.01	1.000	30	0.000	Pass	1

#### 9. Save test result

Data Save

Test Status

- 1 Start Test
- 2 Creeping Test
- 3 Forward Active
- 4 Reverse Active
- 5 Forward Reactive
- 6 Reverse Reactive
- 7 Influence Test
- 8 Dial Test

Batch No. (Auto) 1608 Temperature 24 Operator Dehon/Ped

TestDate (Auto) 2018/01/04 Humidity 58 Reviewer Bandeiran

Save Previous Close

Input the data if needed.

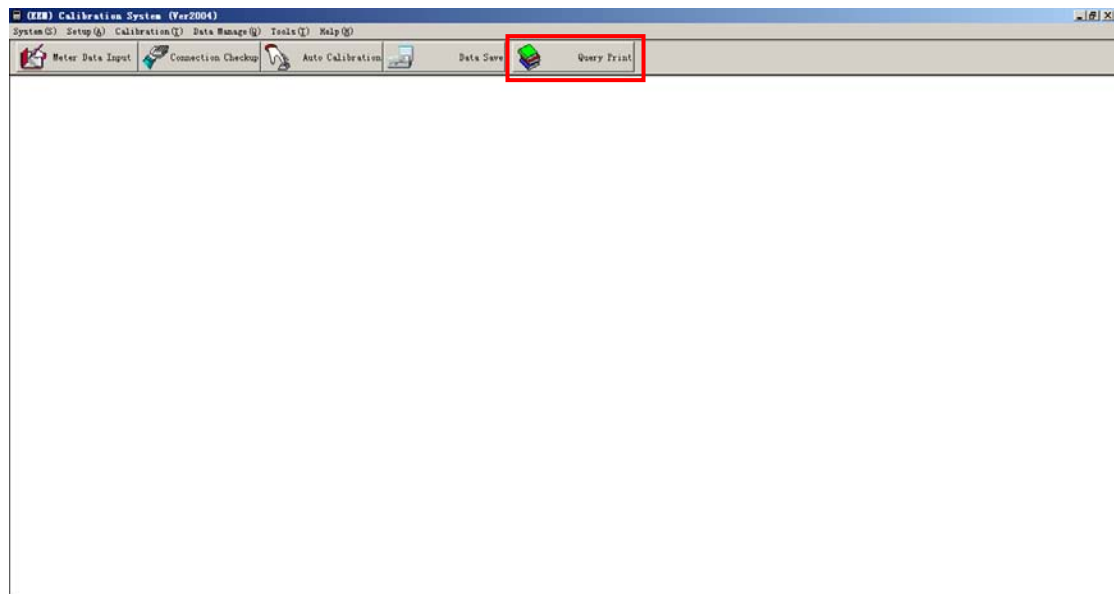
Batch No. (Auto) 1608 Temperature 24 Operator Dehon/Ped

TestDate (Auto) 2018/01/04 Humidity 58 Reviewer Bandeiran

Manager Externa

#### 10. Test result query

Click 'Query Print' can export the test data.

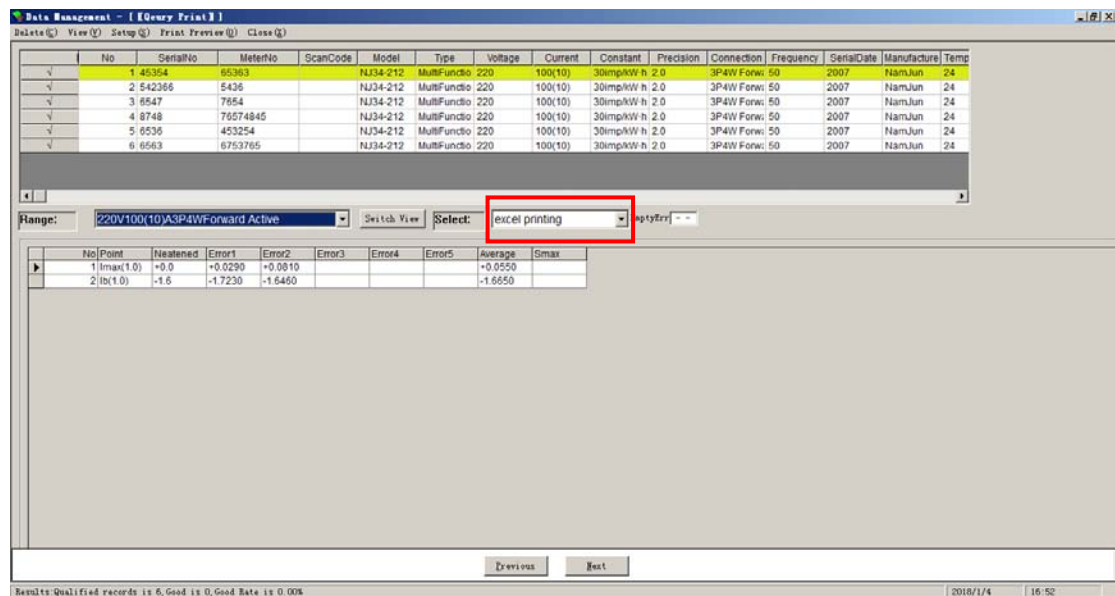


Input the batch number or any other search option.

The image shows the 'Query Conditions' dialog box. It has a blue title bar with the text 'Query Conditions'. Inside the dialog, there is a search criteria section with a pencil icon, a dropdown menu showing 'BatchNo', an equals sign, and a text field containing '1608'. Below this, there are three identical empty rows, each consisting of a dropdown menu, a text field, another dropdown menu, and a text field. At the bottom of the dialog, there are two buttons: 'OK' and 'Cancel'.

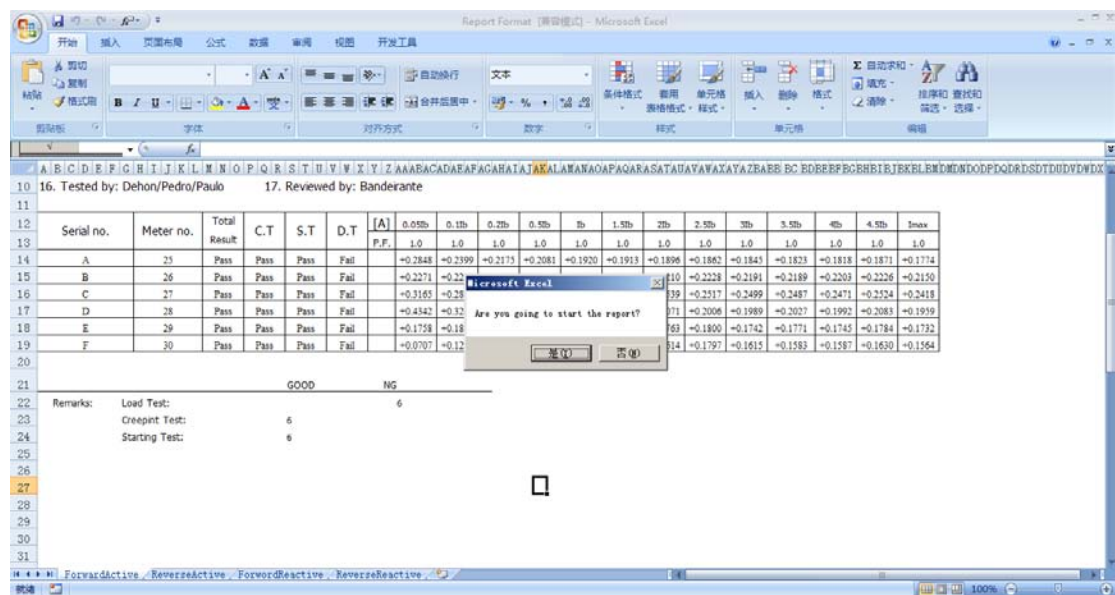
#### 11. Export test result

Select the export format,



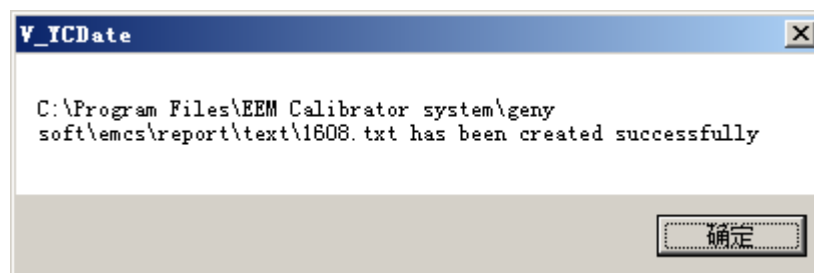
### 11.1. Export to excel format

Click next to export data to excel format file. Excel's macro function must be enabling.



### 11.2. Export to txt format

File is automatically save to the follow address,



#### Text Report

1. Model: NJ34-212      2. Test Date: 2018/01/04      3. Humidity: 58      4. Temperature:24

#### \*\*\*Test Range Info\*\*\*

No.	Serial No.	Meter No.	Conclusion	No load	Start Test	Dial Test	Imax(1.0)	Ib(1.0)
1	45354	65363	Fail	Fail	Fail	Fail	+0.0550	-1.6650
2	542366	5436	Fail	Pass	Pass	Pass	-0.6480	+64.2117
3	6547	7654	Fail	Pass	Pass	Pass	-0.9650	-1.6380
4	8748	76574845	Fail	Pass	Pass	Pass	-0.6975	-0.8563
5	6536	453254	Fail	Pass	Pass	Pass	-0.7200	-0.9893
6	6563	6753765	Fail	Pass	Pass	Pass	-0.4730	-2.7703

## 12. Source control

### 12.1. Quick Dive control

For loading with electric meter, the property of load have to select captive load, otherwise it will causing overload alarm.

Control panel

Output

Device type: Three phase

Wire: P34 Active three phase four wires

Voltage(V): 57.7 ☒ A ☒ B ☒ C

Current(A): 5 ☒ A ☒ B ☒ C

Freq.(Hz): 50 (45Hz ~ 65Hz)

☐ Phase Angel

Angel

A: 0 B: 0 C: 0

Power Factor: 1.0

Phase: ☒ ABC ☐ A ☐ B ☐ C

Property of load: ☐ Induction ☒ Capacitance

Restrict: 264 V 100 A

☐ harmonic wave

Harmonic parameter

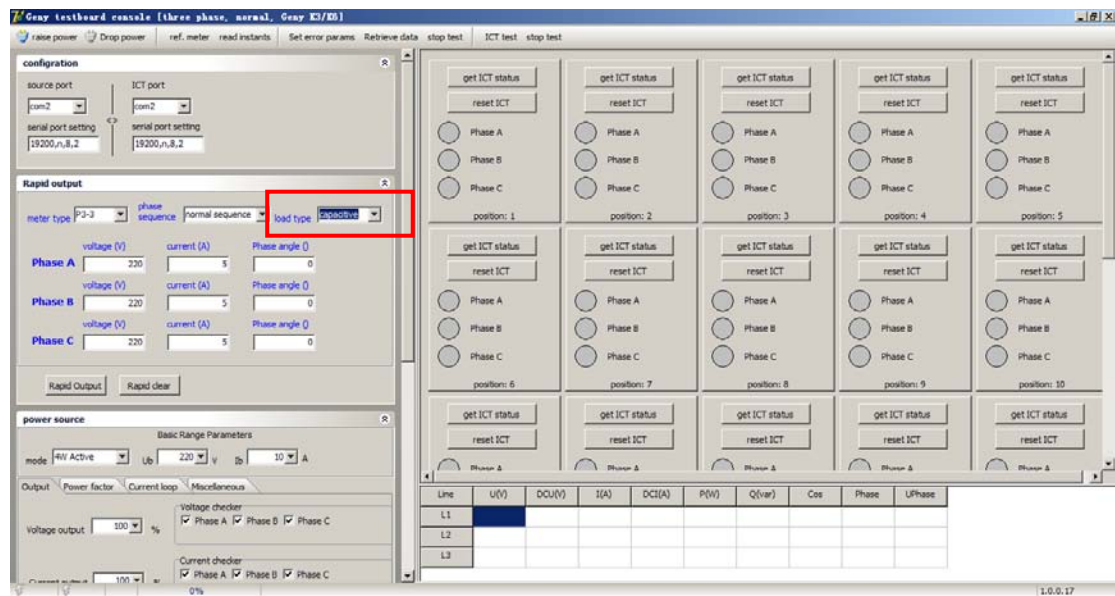
☐ Ua ☐ Ub ☐ Uc ☐ Ia ☐ Ib ☐ Ic

Clear Harmonic Wave harmonic wave H Output I Stop I Close X

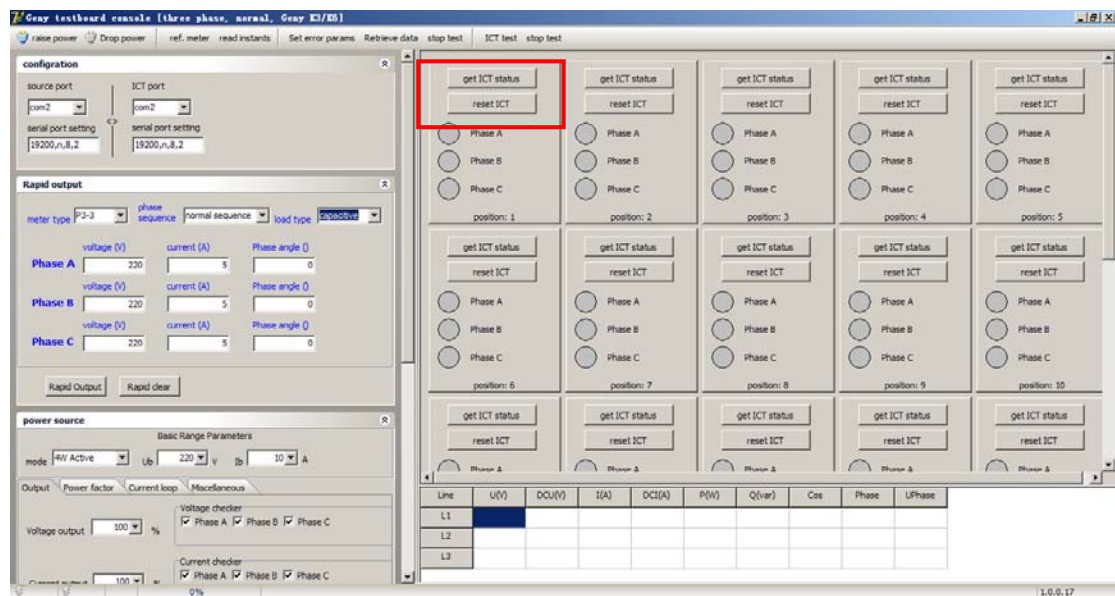
### 12.2. Source Control Tools

#### 12.2.1. Power source control

For loading with electric meter, the property of load have to select captive load, otherwise it will causing overload alarm.



### 12.2.2. ICT testing



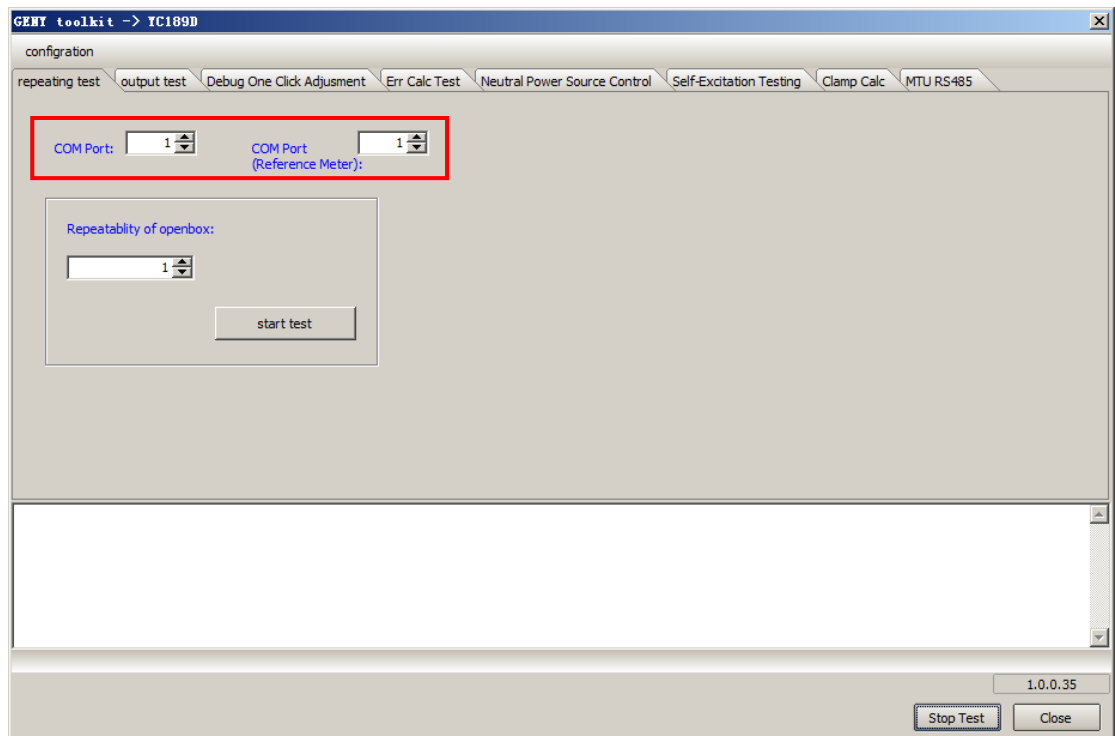
### 12.3. Toolkits

Click the 'Toolkits' icon on the desktop or in the installation folder of software.

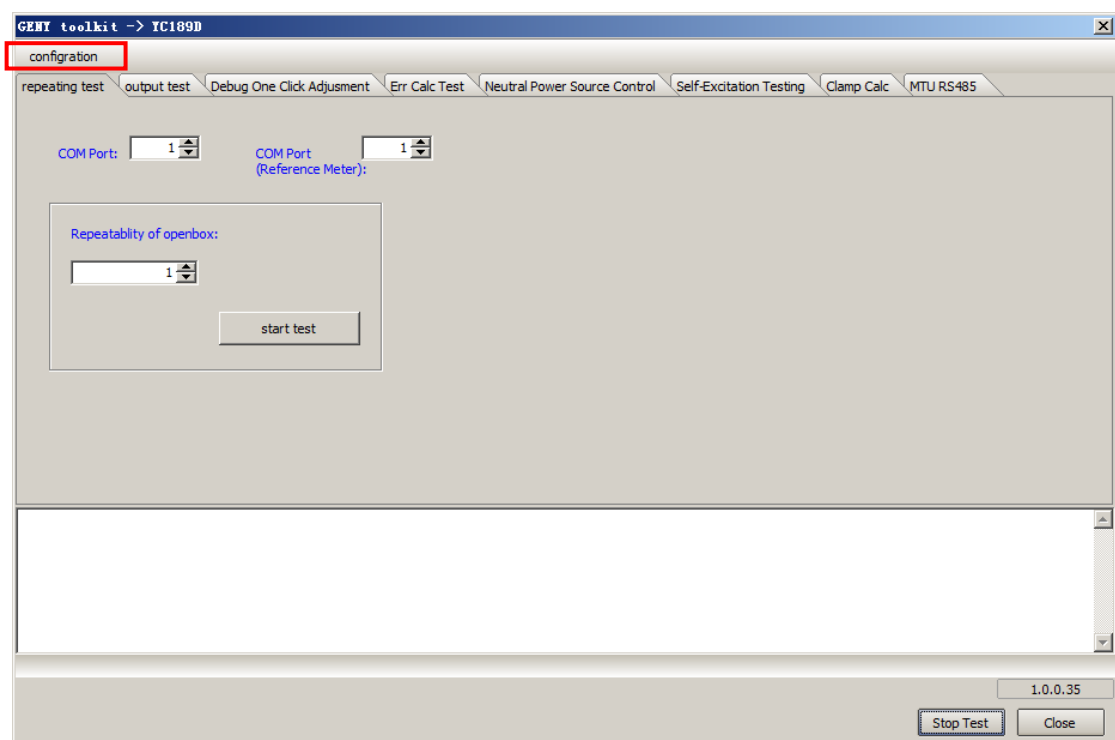


#### 12.3.1. Configuration 1

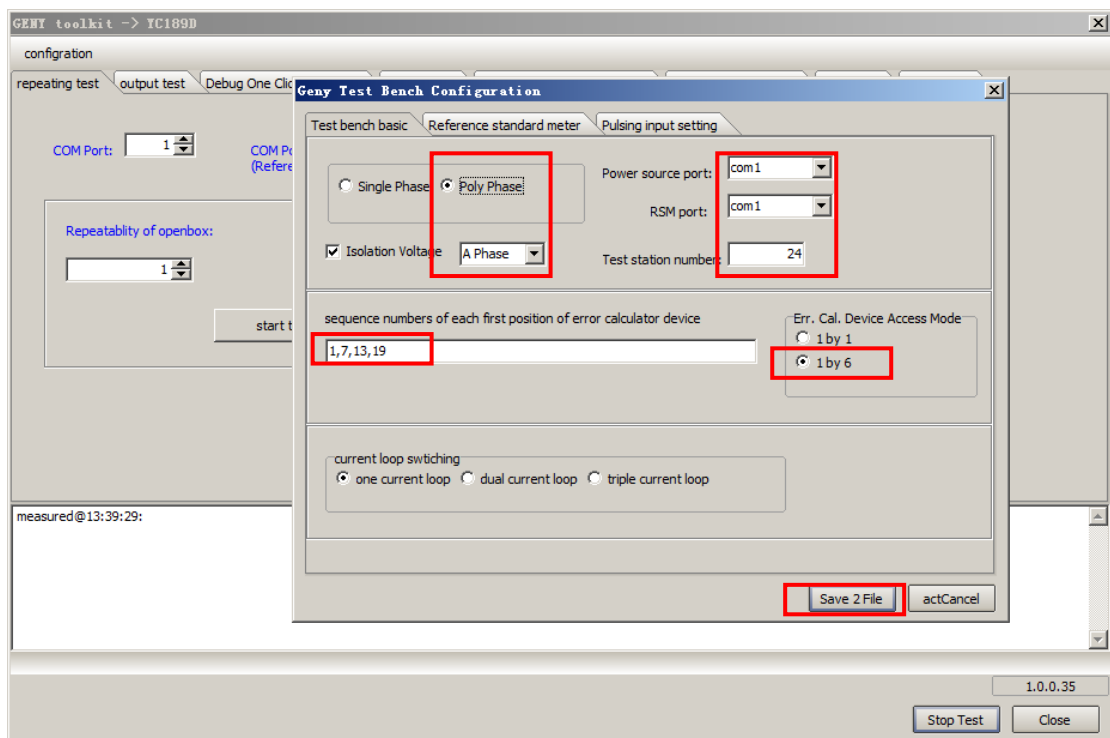
Set the comport of source and reference meter



### 12.3.2. Configuration 2



Set the comport again, and other configuration

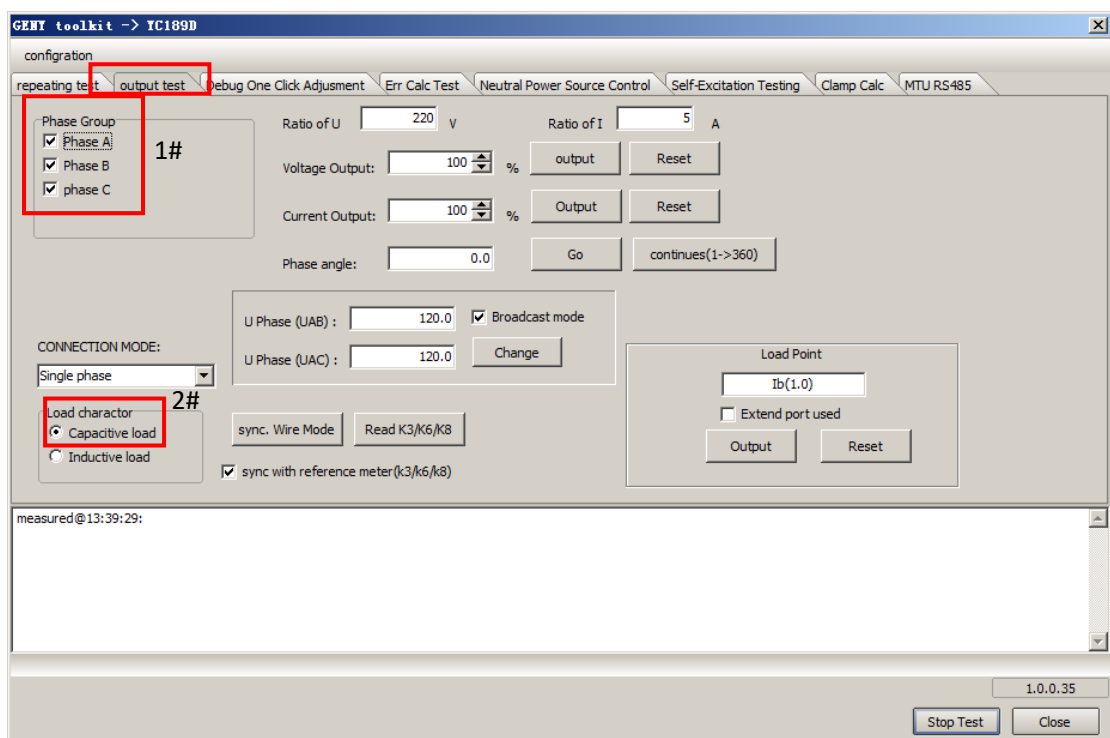


Remark:

Sequence number of each first position of error calculator device is 1,17,13,19 for standard design. Error calculator device access mode is '1 by 6' for standard design.

Please set the program to run as 'Administrator mode' when press 'Save 2 file' is rejected by windows,

### 12.3.3. Output test preset



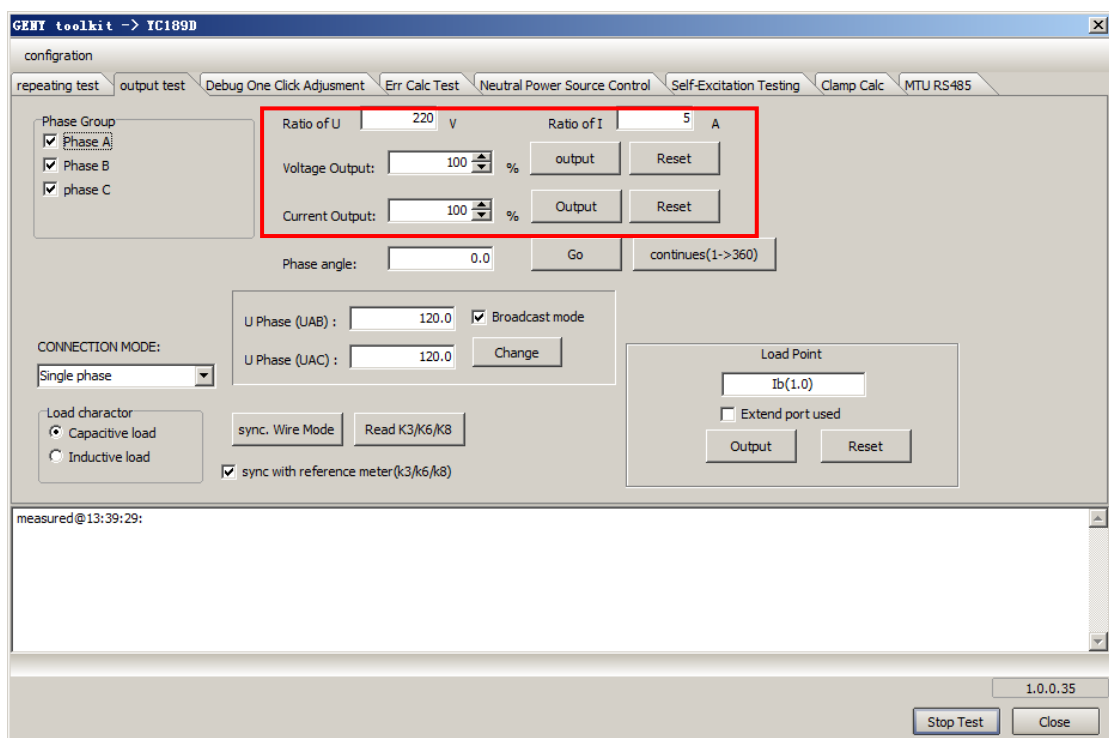


1#	Phase Group	Select the control phase
2#	Load character	For electrical meter, select 'Capacitive load'. For mechanical meter, select 'Inductive load'. Source will be overloaded if not select correctly.

#### 12.3.4. Output test of voltage and current

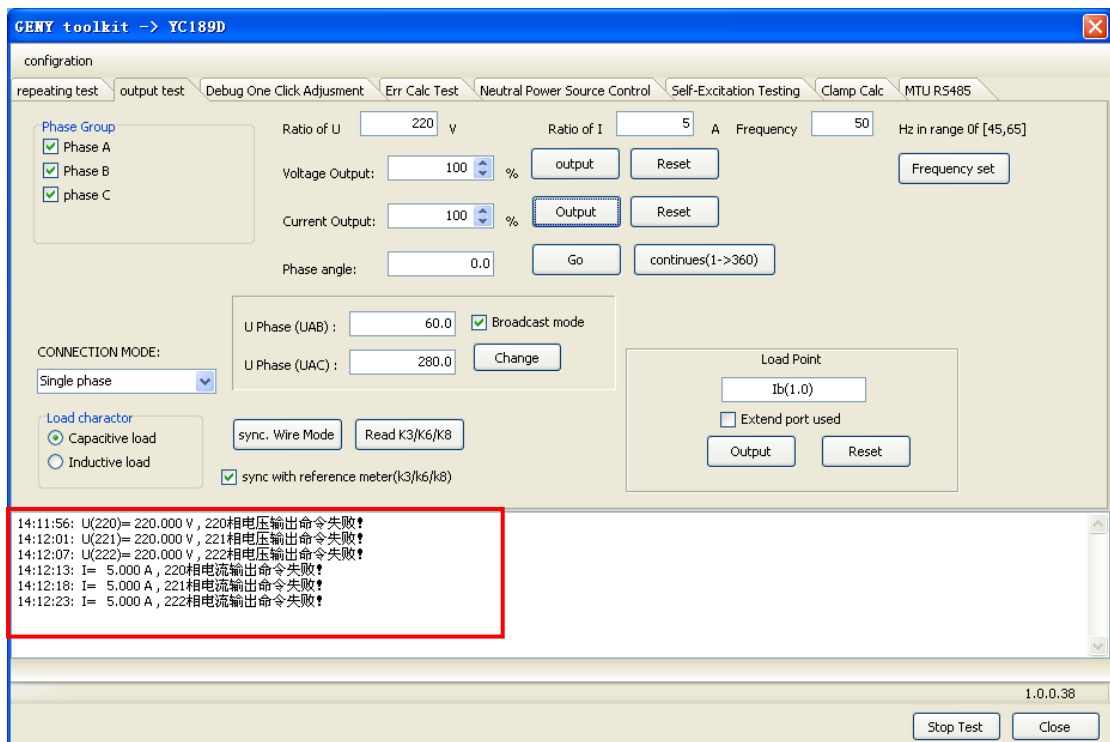
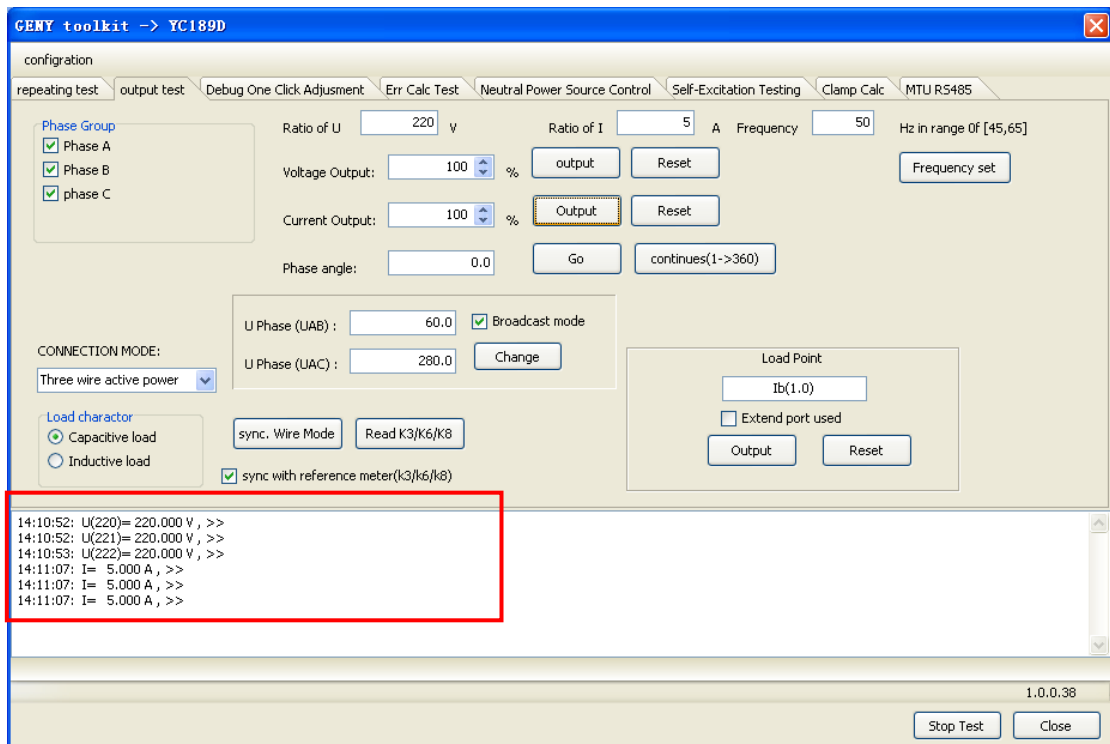
Set first the ratio of voltage and current.

By click on the 'output' button to generate voltage and current, 'reset' button the drop voltage or current down to zero.

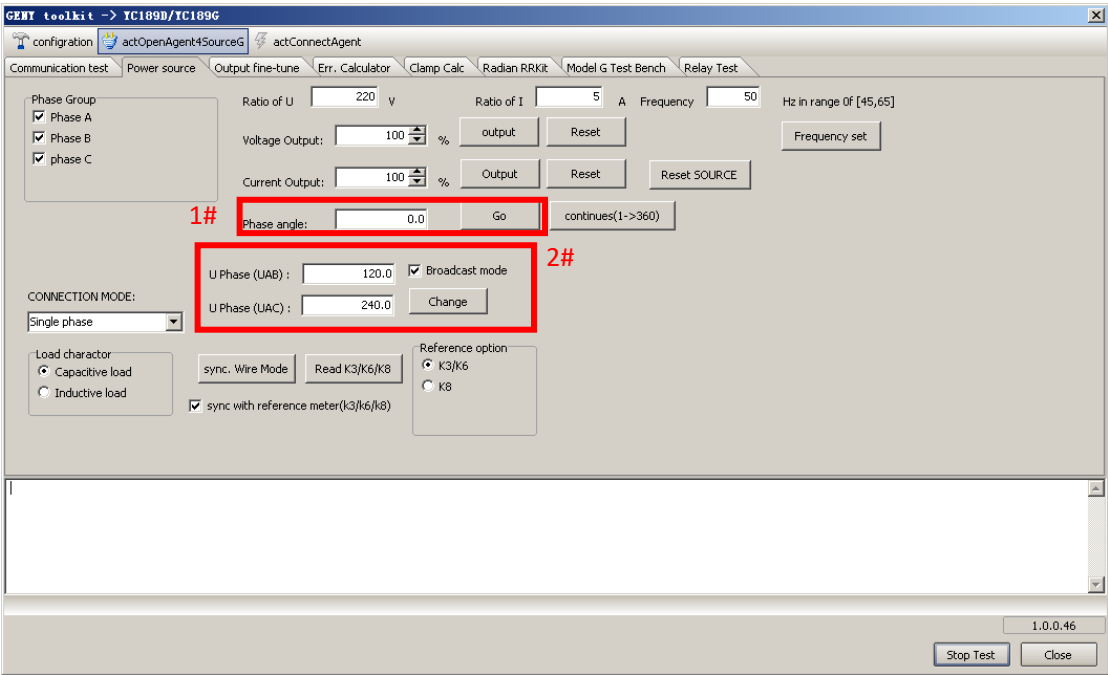


#### 12.3.5. Communication status indication

Communication successful, return message will display as '>>', otherwise it will display as '????!'

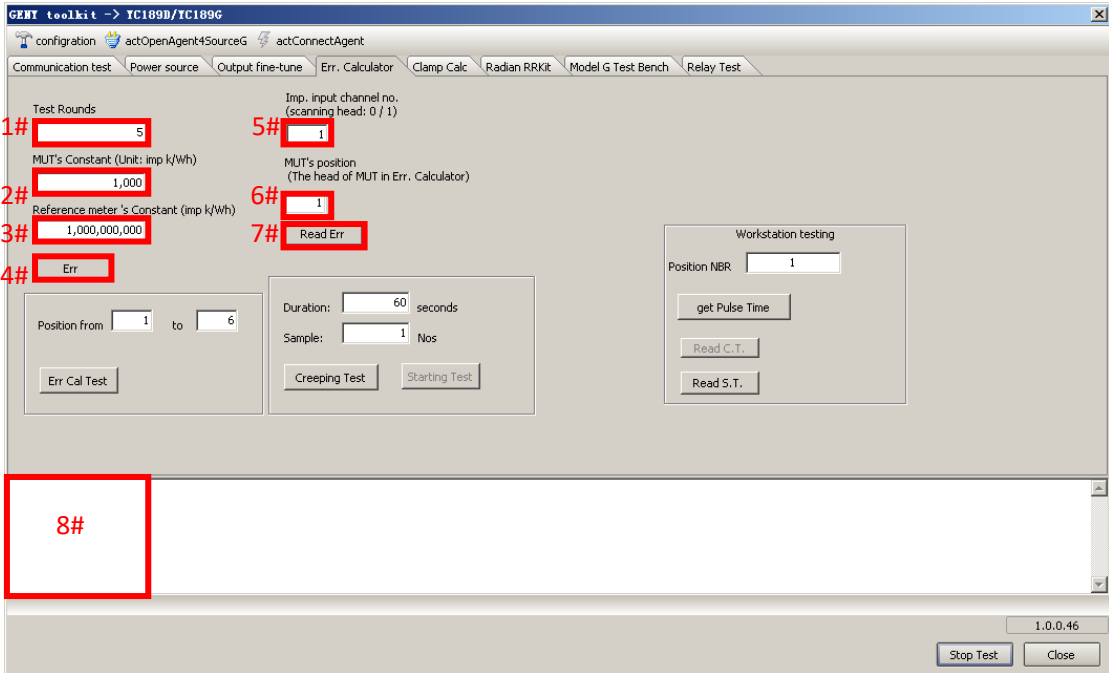


12.3.6. Phase position (power factor) and phase angle control



1.	Phase angle	Phase position in between voltage and current. Press 'Go' button to set the change.
2.	U phase	Voltage phase angle, U phase (UAB) =120, (UAC) =240 by default. Press 'Change' button to set the phase angle.

12.3.7. Error testing function

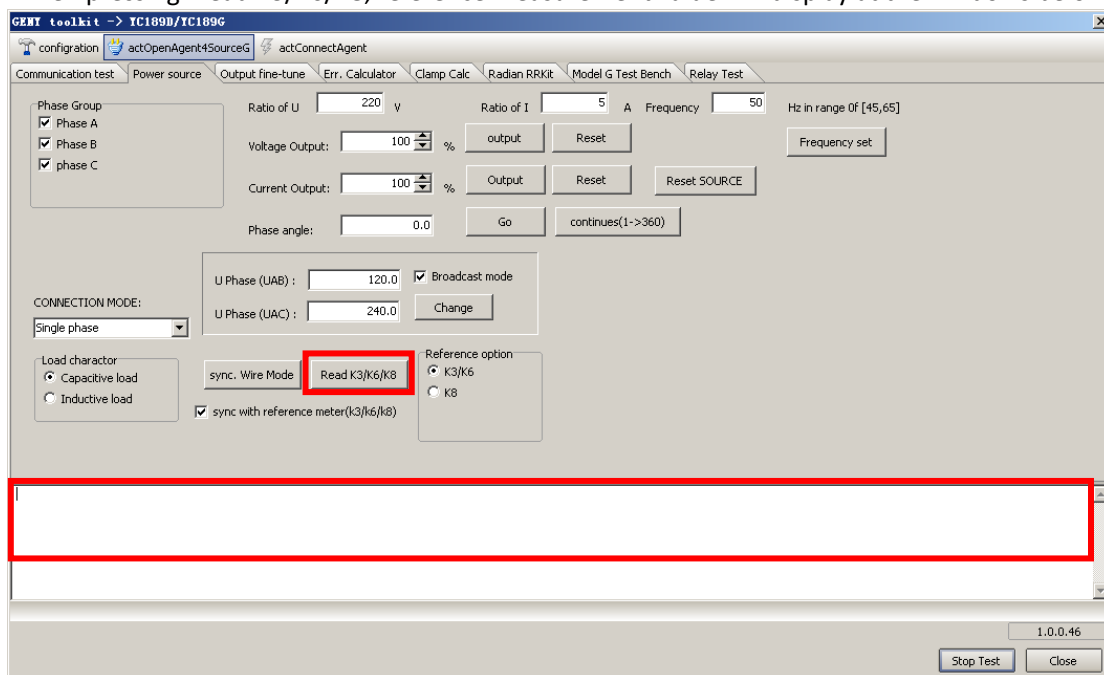


1.	Test Rounds	Pulse circle in the error test
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2.	MUT's Constant	Meter's constant
3.	Reference's Constant	0~1A      1,000,000,000 1~10A     100,000,000 10~100A   10,000,000
4.	Err	Set the 1#,2#,3# setting value to error calculator
5.	Imp. Input pulse Channel no.	User's left hand side sensor channel is 9. User's right hand side sensor channel is 1.
6.	MUT's position	In standard design, even six meter in connect with one error calculator. When software try to read the error of error calculator, it will start call from the first meter of the error calculator, usually they are; 1, 7, 13, 19 meter position.
7.	Read error	Error result on meter rack will return to software window 8#

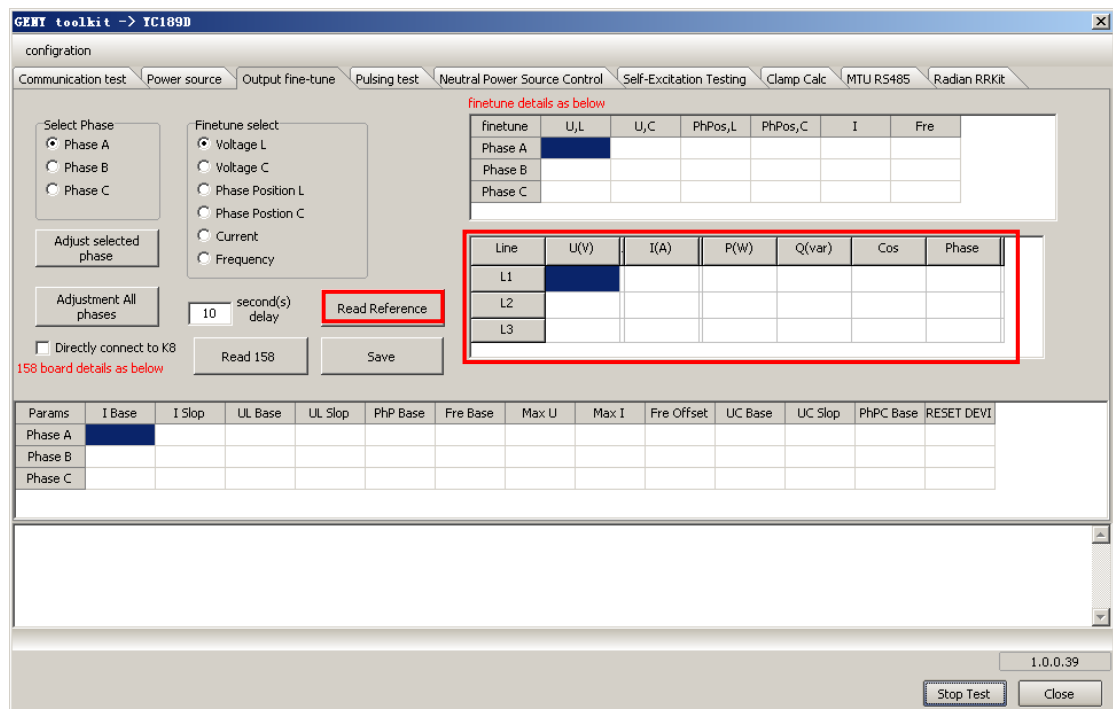
### 12.3.8. Standard meter communication test 1

When pressing 'Read K3/K6/K8, reference measurement value will display at the windows below.



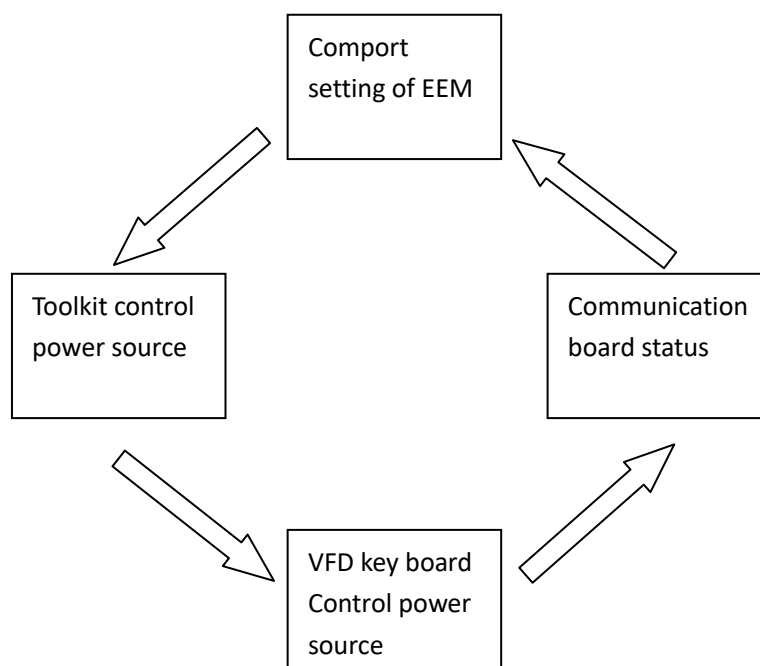
### 12.3.9. Standard meter communication test 2

Press the read Reference button, the reference display parameter will feed into the software.



## 13. Trouble shooting

### 13.1. Power source no respond by EEM software



13.2. Test could not start

RSM communication comport setting incorrect

13.3. Division by zero

This message indicates the software not able to read the constant of RSM.

13.4. No have feedback error

Error calculator setting issue