

# *New Migration Tester*

The system of insulation deterioration **ECM-100**



# Test of migration and insulation resistance

## High accuracy, High reliability and High efficiency

Now, The earth and climate of market are necessary to overhaul research and development of new material and method of mounting from a stand of energy saving and Pb and halogen free. We offer new generation electrochemical migration tester that is possible to test with high reliability and easily.



Measurement of complete independence

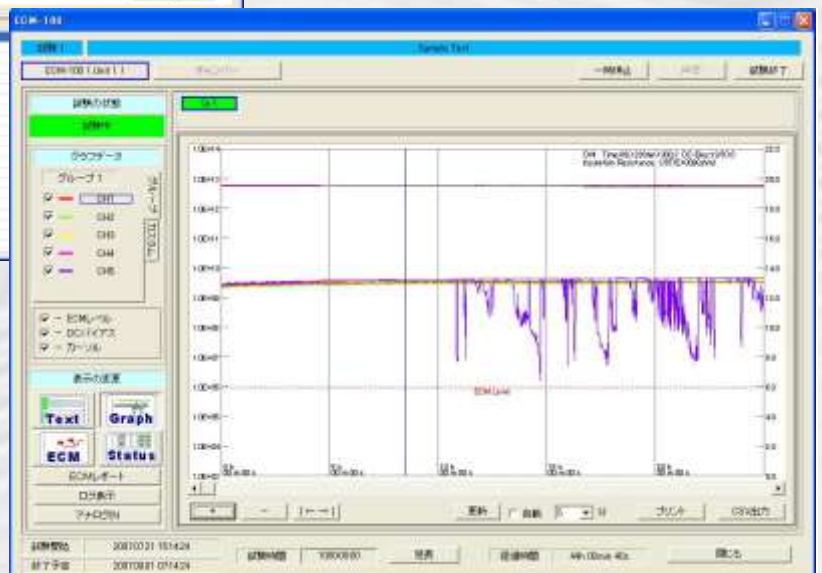
Applied voltage is complete independence and measurement speed is 16ms

Measurement system is all in one

Measurement and chamber are controlled by only ECM-100

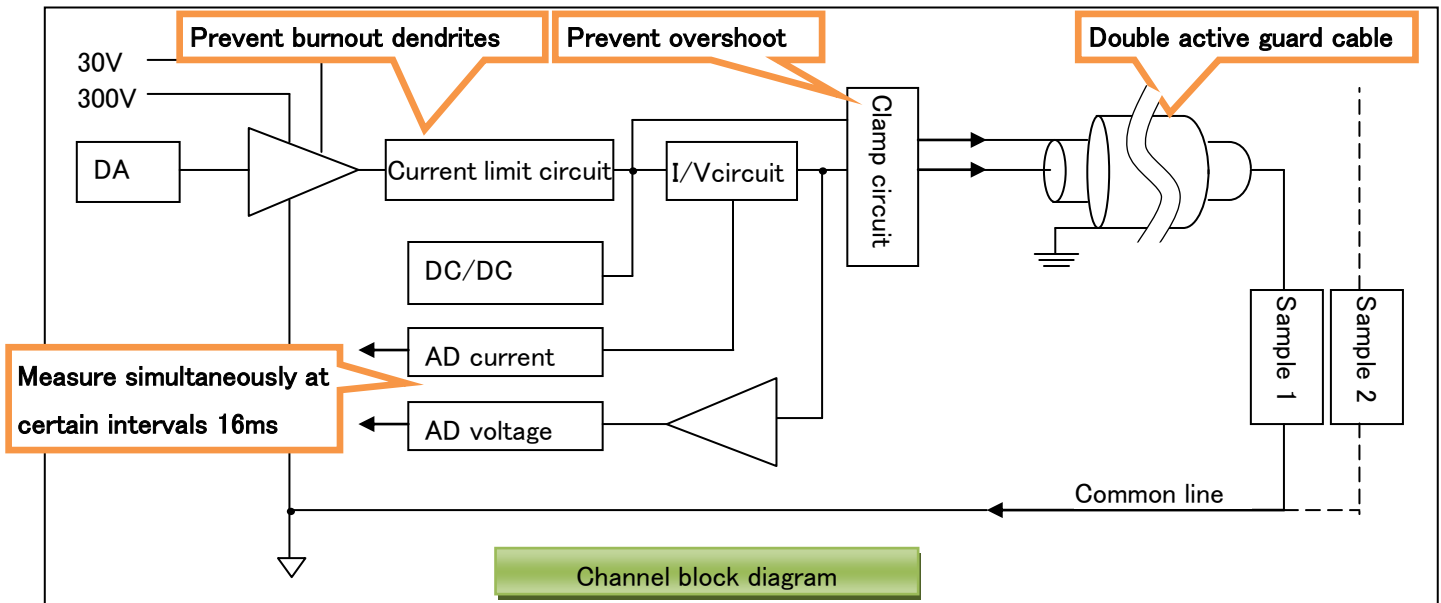
Excellent operation

Easy operation and easiness of data reduction



## ◆ High speed measuring and measurement of independence

ECM-100 is controlled to measure each channels by complete independence. And there is no effects on between channels.



### ⇒ Character and advantage

⇒ DA convertor of applied voltage are mounted each channels

CH1	10V
CH2	15V
CH3	20V

It is possible to set applied voltage each channel.

Test of analysis voltage is possible with easily.

Applied voltage can set 1–300V with seamless.

⇒ Current limit circuit is mounted each channels

There is no effect to other channels when happen to leak touch.

It is possible to prevent burnout dendrites inasmuch as current limit is 700 $\mu$  A.

⇒ High speed AD convertor is mounted each channels. That speed attains 16ms.

Measure true resistance because of there is no time difference in all channels and simultaneously sampling all channels.

It is implemented optimal moving average each current range.

When high resistance ham noise of power supply ablate by equation that is 16ms\*16 times. When low resistance leak touch can be detected because of 16ms \* 1time.

⇒ Measure leak of current by high-side measurement. Clamp circuit and double shield active cable.

Common line is one per group because of high-side measurement.

When maintenance of change measurement cable, it is possible only one kind of cable.

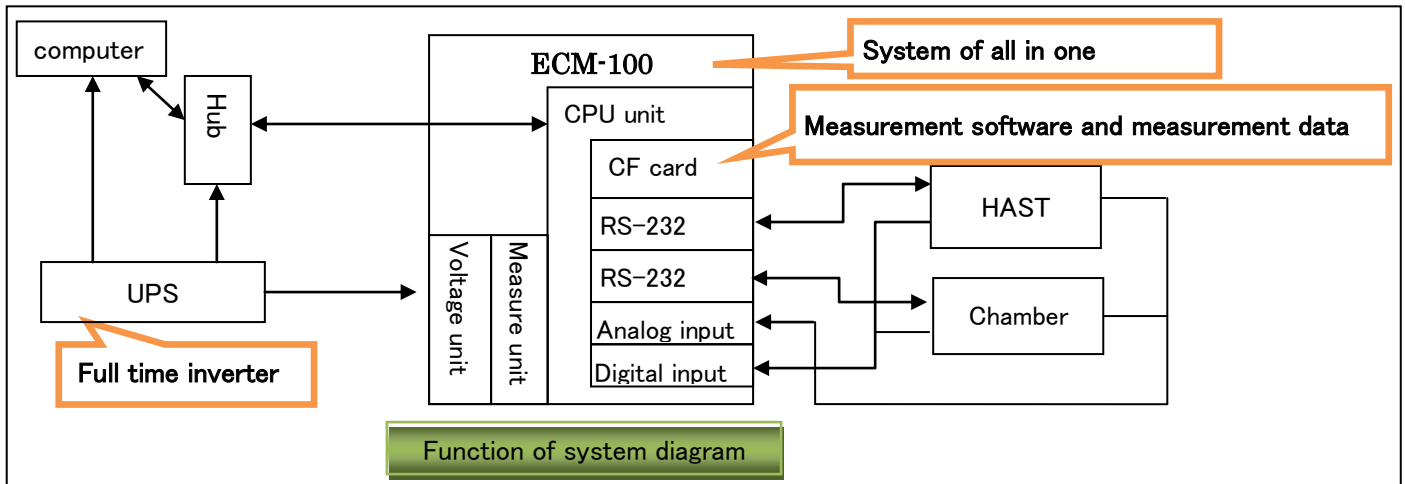
There is no effect from noise because of employ double shield cable that is done active guard.

Prevent overshoot after leak touch

Can drive High-capacitance(300V, 470 $\mu$  F) It is good for test of mounting electronic components circuit.

## ◆ Build up with high capability, high reliability and high convenience

ECM-100 that is all in one measurement system is able to test by itself and obtain test data in CF card. There are two cases that is 40ch and 100ch models. Can choice by budget and installation space.



### ⇒ High capability

It is possible to test without computer after test condition is set and started.

Control of communicate of HAST/Chamber and obtain test data are done by only ECM-100.

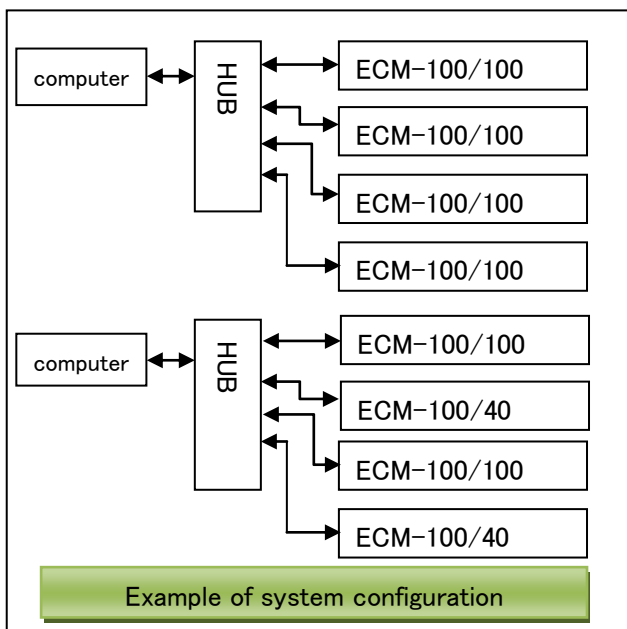
It equips function of inter locking that is like to alarm when HAST/Chamber door is opened while test with normally. If HAST/Chamber does not have communicate function it can obtain temperature and humidity data by analog input.

### ⇒ High reliability

Obtain condition and test data in CF card that is more high reliability than HDD.

System of ECM-100 is backed by UPS. And test is able to continue when stop at moment and stop 5 seconds or less.

### ⇒ High convenience



All of main composition of ECM-100 is a slot in. And it can change unit of ECM-100 with easily.

Version up software of ECM-100 is easily.

Maximum system is 400ch.

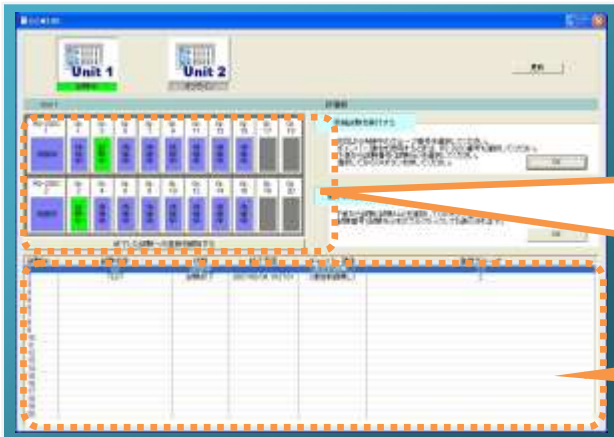
100ch system is possible to mount by one step in 19" rack.

It is possible to use cases that is 40ch and 100 ch together.

Minimum system of ECM-100 is 10ch. And at a later date, establish more channels are easily.

If there is resistance box that is optional parts, it read the proofs of ECM-100 is easily.

**Main screen** Though high capability, excellent operability that is easy to see and also no vexatious operation



**Group status**

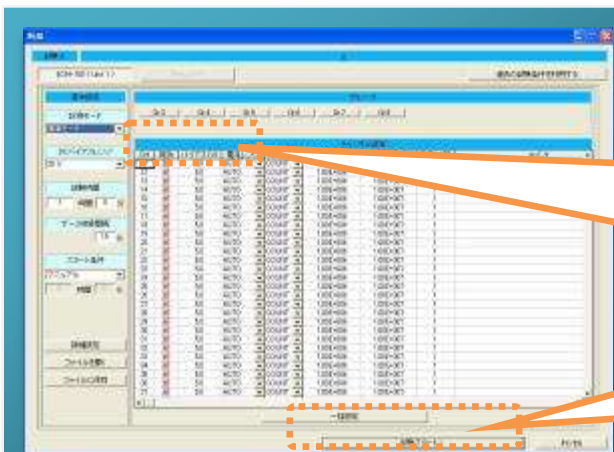
Get grip on condition of each group quickly.  
When make a new test, select and click group icon.

RG-220C 1	Gr 1	Gr 3	Gr 5	Gr 7	Gr 9	Gr 11	Gr 13	Gr 15	Gr 17	Gr 19
待機中	待機中	待機中	待機中	待機中	待機中	待機中	待機中	待機中	待機中	待機中
RG-220C 2	Gr 2	Gr 4	Gr 6	Gr 8	Gr 10	Gr 12	Gr 14	Gr 16	Gr 18	Gr 20
待機中	待機中	待機中	待機中	待機中	待機中	待機中	待機中	待機中	待機中	待機中

**Test list**

Displayed active tests condition of view.  
Be able to access to test data only click test view  
(can put in maximum 20 test in screen)

**Setting screen (ECM-100)** detailed setting of each channels and also possible to be batch setting



**Setting of each channels**

•input directly in cells

CH	有効	バイアス(V)	電流レンジ
11	<input checked="" type="checkbox"/>	5.0	AUTO
12	<input checked="" type="checkbox"/>	10.0	AUTO
13	<input checked="" type="checkbox"/>	20.0	AUTO

(bias setting can set each channels)

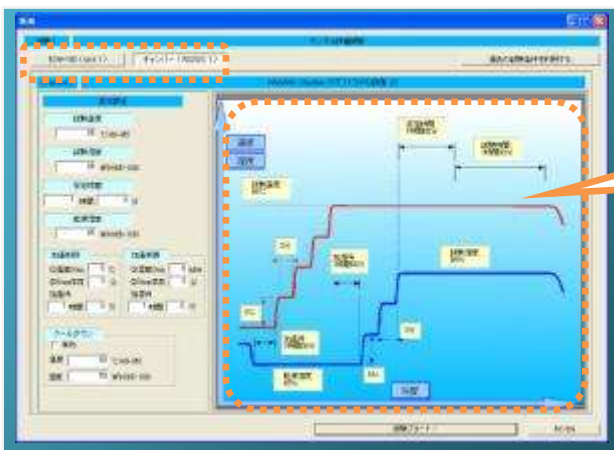
**Batch setting**

•call dedicated cell and set "specification all ch"



specify channel is easy to only drag on cells on the screen

**Setting screen (HAST/Chamber)** It is possible to set it compares with the illustration display



**Illustration display**

Set mistake is prevented by set value is displayed in right place quickly.

(it is possible to change setting screen and ECM-100 screen only one click)

\*the function of control HAST/Chamber is option

**Data screen seek out easiness to see and easiness to use by classifying 4 screens**

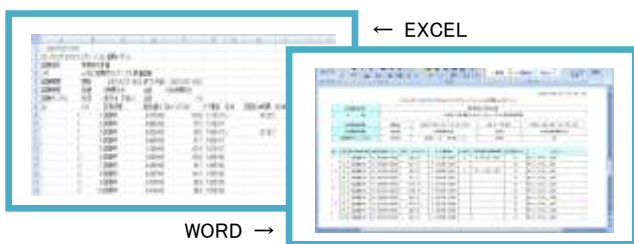


Data screen	The main content of display
<b>Text</b>	Measurement data is displayed in character. Displayed about DC bias, leak current and breakdown time.
<b>Chart of resistance</b>	Display measurement data by time line. Function of cursor can zoom optional point and change to CSV.
<b>Chart of ECM</b>	History of breakdown is displayed by time line. Displayed about chart of failure rate and breakdown time.
<b>Status</b>	Displayed condition of test or Presence of breakdown.

Other function  
 Output CSV files...strong support to editing work by function of rich setting.  
 Weibull plot...come equipped with function of adjudicate on type of breakdown.

**Function of report avail for progress report and record      Function of maintenance improves reliability**

**the main content of display of function of report**  
 Test files or picture files that is report form are output with title, memo and comment according to arbitrary timing.  
 It is able to paste to EXCEL and WORD and edit it.



Function of maintenance	Brief
<b>Self check</b>	<ul style="list-style-type: none"> <li>■ check DC bias DC bias is set to when factory ships and correct each channels by automatically.</li> <li>■ check leak current Check up leak current in tester and check soundness to ability of measurement current.</li> </ul>
<b>Set up system</b>	Register HAST/Chamber in tester. They can be applied each nickname and if HAST/Chamber is plurally there is no misgiving that makes a mistake in HAST/Chamber.

**Excellent recovery at just in case provide for perfect test of electrochemical migration**

test is finished soon, but there is no electrochemical migration !	Test time can be extended according to the state of samples.
other test is stopped by mis operation !	The ending test can be restarted. Data files becomes consecutive file.
computer is broken whole the test !	There is no effect because ECM-100 is all in one system. Test data that is in CF card can be collected with other computer.

## The main specification

Article		Specification, capability and other		
Case	Type	ECM-100/40-n (n : channel)	ECM-100/100-n (n : channel)	
	Case type	40CH type(maximum is 4 measurement unit)	100CH type (maximum is 10 measurement unit)	
	Dimensions	265W × 330.3D × 405H (protrusion is excluded)	417.4W × 330.3D × 405H (protrusion is excluded)	
	Power consumption	About 70VA (when mount 4 measurement unit)	About 130VA (when mount 10 measurement unit)	
	Weight	About 15kg (when mount 4 measurement unit)	About 20kg (when mount 10 measurement unit)	
	Use power supply	AC100V 50/60Hz (can use it in other power supply area by UPS)		
Measurement unit	Number of channel	10CH		
	Range of resistance	2kΩ ~ 10TΩ		
	Input DC bias	Voltage range	2 range (1.0~30.0V, 30.1~300.0V)	
		Setting voltage range	1 group (5CH)	
		Setting voltage level	Each channels	
		Setting ability	0.1V	
		Setting accuracy	±[0.3%(F.S.)+0.5]V	
		Maximum output current	700μ A/CH	
	Measure DC bias	Measurement range	2 range (0~33V, 0~330V)	
		Measurement accuracy	±[0.3%(F.S.)+0.5]V	
		Measurement ability	0.001V~ (essential figure is 4 digit)	
		AD converter	24bits $\Delta$ Σ AD converter/CH	
		Measurement speed	16ms	
	Measure current	Measurement method	High-side measurement current of each channel	
		Measurement range	5 range (~500μ A, ~50μ A, ~2.5μ A, ~125nA, ~6.25nA)	
		Setting measurement range	Appoint individual channel or auto range	
		Measurement accuracy	±0.3% (F.S.)	
		Measurement ability	1pA~ (essential figure is 4 digit)	
		AD converter	24bits $\Delta$ Σ AD converter/CH	
		Measurement speed	16ms	
	CPU unit	Control channels	5~100CH (every 5 channels)	
Obtain test data		Control test	1 group (5CH)	
		Test setting time	1 minute ~ 9999 hours	
		Obtain interspace (periodic)	1 ~ 60 minutes	
		Obtain interspace (arise ECM)	16ms	
		Recording media	Compact flash card	
Other		Communicate with host computer	LAN port × 1	
		Communicate with HAST/Chamber	RS-232C port × 2	
		external input 1	Contact input × 4 (be able to inter locking and emergency shutdown)	
		external input 2	Input voltage (1~5V) × 2, input current (4~20mA) × 2 (obtain temperature and humidity is possible)	
		Self calibration	correcting output voltage and check aberrant leak current	
Measurement cable	Double shield active guard cable (allowable temperature limit: 200 degrees, coat material: teflon)			

## Strong supported test of electrochemical migration by J-RAS !

Electrochemical migration test is done by using ECM-100 and HAST/Chamber with the content corresponding to the customer.



### The main test menu

- Test of insulation characteristic of PWB
  - Test of insulation characteristic of between through hole
  - Test of insulation characteristic of solder resist layer
  - Test of insulation characteristic of Pb free solder
  - Test of insulation characteristic of metallizing plating
  - Test of insulation characteristic of flux
- and other

### Corresponding the main test standard

JPCA-ET01~09 JIS Z 3824 ISO 9455-17  
JIS-C60068-2 IEC 60068-2-3/67 IPC TM650 2.6.3E  
JIS C6008-2-38 IEC 60068-2-66 and other

### Step from request to end

1. Meeting of content of test  
Ask for the content of test that want to do.
2. Make estimate sheet  
The estimate sheet is made according to the content of test.
3. Meeting of schedule  
Schedule is adjusted as soon as deciding to test.
4. Test and result report  
When test is ends (or while test), make report by the content matched to the demand and reports.



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