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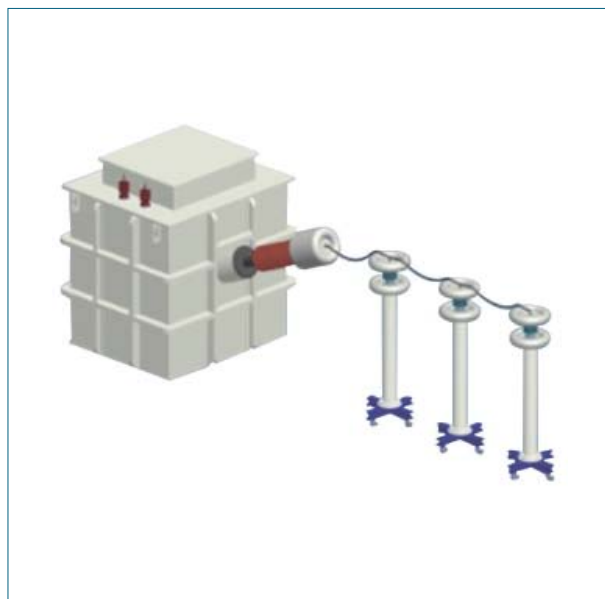
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# Heavy Electricity Tester

## AC & DC High Voltage Tester



### | Product Feature |

- SM High Voltage Tester is designed for testing withstand voltage of direct current and alternating current of electric, electronic, and power cable industries. It is an essential equipment for the quality assurance and development.
- The range of SM High Voltage lies from small portable type to one that consists of high capacity control panel, Voltage Regulator, Reactor, High Volt Trans.
- SM-Series: compact size and solid
- Compliant with Industrial Standards. It has good safety, and compatibility
- Various models

### | Size |

| Model type        | SM-AC5kV10mA | SM-AC5kV1A  | SM-AC10kV1A | SM-60kV100mA  |
|-------------------|--------------|-------------|-------------|---------------|
| Size<br>(W×H×D)mm | 275×165×270  | 515×385×490 | 600×680×650 | 727×1330×1185 |

### | Specification |

| 5    | 10    | 20   | 30   | 50   | 80   | 100   | 200   |
|------|-------|------|------|------|------|-------|-------|
| 5kV  | 10kV  | 20kV | 30kV | 50kV | 80kV | 100kV | 200kV |
| 10mA | 200mA | 1A   | 2A   | 5A   | 10A  | 20A   |       |
| 31A  | 40A   | 50A  | 60A  | 70A  | 80A  | 90A   |       |

SM-□kV-50A

## AC 250kV VI Conditioning Tester



Voltage Regulator

### | Introduction |

This testing machine is a vacuum interrupts (VI) voltages testing facility. It is designed for automatic testing by applying current automatic control and improving quality of the product by applying voltage to high voltage fire of up to 250kV inside the specimen.

### | Product Feature |

- Provide ability AC 250kV high voltage test.
- Provide selection the Automatic/Manual Program control test.
- Designed for the VI Conditioning test.
- Provide auto test with automatic current control.



250kV High Voltage Transformer



PC Control Program



Intelligent control

### | Specification |

| Model           | SM-250kV200mA                                                                                                                         |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Output Voltage  | AC 0 ~ 250kV (Max.)                                                                                                                   |
| Output Current  | 200mA(Max.)                                                                                                                           |
| Output capacity | 50kVA                                                                                                                                 |
| Time setting    | 0 - 99hours                                                                                                                           |
| Control Method  | 1)PC Program control<br>2)Auto: Voltage/Current auto control<br>3)Manual: Voltage/Current manual control                              |
| System display  | Test Voltage / Test Current / Primary voltage/ Secondary voltage<br>Test HV Graph / Hi -Peak chart / Status Timer / Regulator Control |
| Safety device   | - Emergency stop switch<br>- Over voltage / Over current limit<br>- Zero Position Voltage                                             |
| Test Data       | Excel File Report Save                                                                                                                |
| Test signal     | Optical Signal Converter                                                                                                              |
| Input Power     | AC 380V±10% 60Hz 1Phase                                                                                                               |



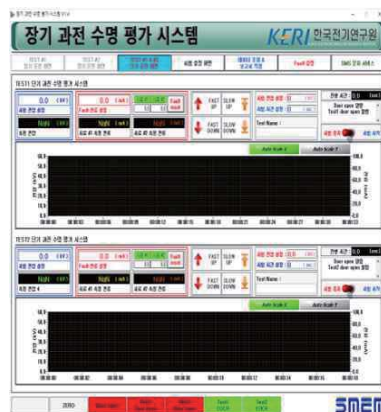
Capacitive Divider

# Heavy Electricity Tester

## Long time Distributor High voltage testing system(AC 60kV)



Program control



Data monitoring



## Positive & Negative DC High Voltage Tester SM-DC250kV



DC 250kV High Voltage tester

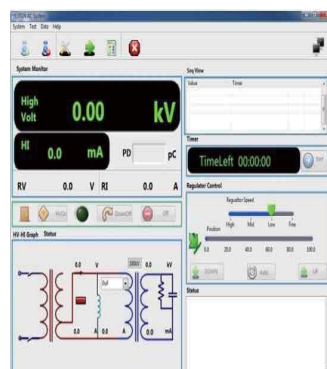


DC 250kV Transformer & Divider

## AC 200kV High Voltage Tester SM-200kV



AC 200kV High voltage tester



## AC High Voltage Tester(Portable)



- Voltage variable type : manual type
- Size : 270(W) × 115(H) × 275(D)
- Output : 5kV/10mA, 10kV/10mA  
10kV/100mA



- Voltage variable type : Manual Type
- Size : 515(W) × 385(H) × 490(D)
- Output : 3kV/500mA, 5kV/300mA  
10kV/100mA, 15kV/10mA

## AC High Voltage Tester(Small Size)



- Voltage variable type : S/D Motor
- Size : 727(W) × 1510(H) × 750(D)
- Output : 5kV/3A(15kVA)  
5kV/5A(25kVA)



- Voltage variable type : S/D Motor
- Size : 650(W) × 1240(H) × 600(D)
- Output : 3kV/3A(9kVA)  
5kV/2A(10kVA)  
10kV/1A 10kVA

## AC High Voltage Tester(Middle Size)



- Voltage variable type : S/D Motor
- Size : 727(W) × 1600(H) × 750(D)
- Output : 5kV/6A(30kVA), 10kV/3A(30kVA)  
5kV/7.5A(37.5kVA), 15kV/3A(45kVA)  
10kV/6A(60kVA), 6kV/10A(60kVA)



- Voltage variable type : S/D Motor
- Size : 600(W) × 1240(H) × 650(D)  
600(W) × 1240(H) × 650(D)
- Output : 50kV 5A(250kVA)

# Heavy Electricity Tester

## Heating Cycle Tester



SM-HC90



Controller



SM-HC90-SVR



### Product Feature

- This product is designed to test heating cycle of contact material
- Compact size.
- It complies with the Industrial standard ; stability and compatibility is high

| Application      | Specification                                      |
|------------------|----------------------------------------------------|
| Model            | SM-HC90                                            |
| Power            | 380VAC 60HZ 1Phase                                 |
| Voltage variable | Voltage controller variable system (Up/Down motor) |
| Voltage gauge    | Input : Analog, Output 1st : Analog                |
| Current gauge    | Output 1st : Analog, Output 2nd : Digital          |
| Recorder         | Digital                                            |
| Operation        | Auto/Manual alter native                           |
| Screen           | Touch screen                                       |
| Size             | 727(W)×1330(H)×1185(D)mm                           |

### Product Feature

- This product is designed to test heating cycle of contact material
- Compact size.
- It complies with the Industrial standard ; stability and compatibility is high

| Application      | Specification           |
|------------------|-------------------------|
| Model            | SM-HC90-SVR             |
| Power            | 380VAC 60Hz 1Phase      |
| Transformer      | 15V/2000A×3EA           |
| Voltage variable | 0 ~ 380V AC 90KVA       |
| Size             | 600(W)×1200(H)×750(D)mm |

## VCB, ACB, ATS Tester



SM-ATS Series



SM-ATS Series



PC Control Program

### Product Feature

- It tests whether circuit breaker opens/closes properly.
- It offers two types of tests: AC/DC



Test Report

| Application             | Specification                                                                                                                      |        |        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------|--------|
| Model                   | SM-VCB                                                                                                                             | SM-ACB | SM-ATS |
| Power                   | AC220V 50/60Hz 1ph.                                                                                                                |        |        |
| Output                  | AC 0 ~ 300V / DC 0 ~ 300V                                                                                                          |        |        |
| Function                | Auto / Manual / Semi Auto                                                                                                          |        |        |
| Voltage Variable Method | Motor drive method, Auto up/down                                                                                                   |        |        |
| Control Part            | Digital AC/DC Voltage, Current meter(4digit)<br>Digital Timer, Voltage UP/Down, A/B/CCTSA+B<br>Auto/Manual/Semi Auto Select Switch |        |        |
| Option Spec.            | Chattering Counter (Active time, Differenttime 00.0ms)<br>PC Program Data management System (Report)                               |        |        |
| Size                    | 750(W) x 727(D) x 1800(H)mm                                                                                                        |        |        |

## Impulse Voltage Generator Tester system

### | Product Feature |



SM-IVG90

- This tester charges DC voltages and simulates lightning strokes to test the endurance of shock. It is designed to test transmission, circuit breaker, condenser, cables and etc. which is used for power transmission and distribution and can be destroyed by thunder.
- Feature of waveform is clear.
- Pado pani resistance one-touch removable; easy to use
- Digital Scope: waveform measurement and saving function
- Auto-volt setting function: auto voltage rise , auto polarity switch is possible
- distance of series connection discharge plot and control plot is controlled automatically.

| Application            | Specification                    |           |           |           |
|------------------------|----------------------------------|-----------|-----------|-----------|
| Model                  | SM-IVG200                        | SM-IVG400 | SM-IVG600 | SM-IVG800 |
| Nominal voltage        | 200kV                            | 400kV     | 600kV     | 800kV     |
| Max. generated voltage | 160kV                            | 360kV     | 540kV     | 720kV     |
| Capacitance            | 0,5uF                            | 0,25uF    | 0,167uF   | 0,125uF   |
| Energy                 | 10KJ                             | 20KJ      | 30KJ      | 40KJ      |
| Polarity               | Positive, Negative motor control |           |           |           |
| Standard waver pattern | 1,2us×50us(±30%, ±20%)           |           |           |           |
| Input power            | AC 220V 50/60Hz 1Phase           |           |           |           |

## Multi Circuit Breaker Tester

### | Product Feature |



- This machine tests whether a circuit breaker opens/closes properly.
- It offers two types tests: AC/DC

| Application             | Specification                                                                                                                      |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Model                   | SM-ST1000                                                                                                                          |
| Power                   | AC220V 50/60Hz 1ph.                                                                                                                |
| Output                  | AC 0–300V / DC 0–300V / DC 24V                                                                                                     |
| Function                | Auto / Manual / Semi Auto                                                                                                          |
| Type of Test            | ATS(W–HS,WP,WW–BIS,CTTS),VTS,ACB,UVT,VCB,LBS,VCS                                                                                   |
| Voltage Variable method | Motor drive method, Auto up/down                                                                                                   |
| Control Part            | Digital AC/DC Voltage, Current meter(4digit)<br>Digital Timer, Voltage UP/Down, A/B/CCTSA+B<br>Auto/Manual/Semi Auto Select Switch |
| Chattering Counter      | R/S/T/N Active time, Differenttime 00,0ms                                                                                          |
| Judgment Function       | Test OK/Fault Display Lamp<br>Test Fault Display Lamp<br>AUX Contacts Fault Display Lamp                                           |
| other                   | Multi connect, Partial central operation                                                                                           |
| Size                    | 1185(W) x 727(D) x 1330(H)mm                                                                                                       |

# Heavy Electricity Tester

## AC High Current Tester



CT-30K (COS Fuse Testing)

### | Product Feature |

- This tester is designed to test high current of fuse or circuit breaker. It makes suitable low-voltage high-current test environment for each breaker's capacity.
- It Produces out-put of various products which is suitable for circuit breaking test. It can get accurate current value by using low current/high current 2stage-ammeter.
- With auto/manual options, controlling current is easy. Magnify the output efficiency by Inverter way using IGBT.

| Application    | Specification |               |               |               |
|----------------|---------------|---------------|---------------|---------------|
| Model          | CT-20K        | CT-30K        | CT-50K        | CT-303K       |
| Input voltage  | 220/380VAC 1Ø | 220/380VAC 1Ø | 220/380VAC 1Ø | 220/380VAC 1Ø |
| Output current | 0~3000A       | 0~2000A       | 0~3000A       | 0~3000A       |
| Output voltage | 0~5VAC        | 0~50VAC       | 0~50VAC       | 0~5VAC        |
| Size(WXDH)mm   | 727X1200X750  | 727X1600X750  | 727X600X750   | 727X1600X750  |

## Lightening Arrester



SM-ART40D



SM-ART80kV5mA

### | Product Feature |

- It simulates a operating condition of operating voltage of lightning arrester.
- It verifies frame-like lightning arrester or polymer lightning arrester whether they works properly.

| Application            | Specification                                                                                                                                                                                                                                                                                              |             |              |              |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|--------------|
| Model                  | SM-ART40D                                                                                                                                                                                                                                                                                                  | SM-ART80D   | SM-ART35A    | SM-ART75A    |
| Input                  | 220VAC 50/60Hz                                                                                                                                                                                                                                                                                             |             |              |              |
| Output                 | 40kVDC 3mA                                                                                                                                                                                                                                                                                                 | 80kVDC 3mA  | 35kVDC 100mA | 75kVDC 100mA |
| Control                | <ul style="list-style-type: none"><li>– Movable</li><li>– Display : Digital Meter, Ampere Meter</li><li>– Setting : Current and voltage setting function, Over current trip, Over load reset, Main switch</li><li>– Raise, Lower Auto/Mode, Monitor Lam P-H, H-VOLT, Pass, NG, ZERO, Raise speed</li></ul> |             |              |              |
| Safety                 | Zero lamp and mechanical discharger, Voltage apply from only 0V                                                                                                                                                                                                                                            |             |              |              |
| High voltage generator | Built in                                                                                                                                                                                                                                                                                                   |             |              |              |
| Size(WXDH)mm           | 515×385×490                                                                                                                                                                                                                                                                                                | 515×385×800 | 515×385×1200 | 515×385×1200 |

## Heavy Electricity Tester Series

\* ATS Tester(PC Program Control)

\* Arrester Tracking Tester

\* Multi circuit breaker tester



ATS  
VCB – Tester  
ACB



## Heavy Electricity Tester Series

\* Automatic Transfer Switch Tester

\* 50kv DC-High Voltage Arresters  
Tester

\* ATS + CTTs+ BIS Process tester



## Heavy Electricity Tester Series

• Heat Cycle Tester  
15V 2000A X 2ea

• AC High Voltage Tester  
AC20kv10A

\* 3 Phase Current Tester  
AC15V 5000A X 3 Ø



# Fire Resistance Tester

## Multi Fire Resistance Tester

### Product Feature

- This machine is designed to test damage of insulation of cable, after applying high-voltage/water/shock/fire to cable.
- Digital V-Meter and A-Meter control voltage/current precisely.
- Digital P.I.D. Controller controls temperature precisely.
- It complies with IEC 60331/BS standard; safe and highly compatible



| Application                 | Specification                                                                                                   |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------|
| Model                       | SM-750                                                                                                          |
| Standard of application     | IEC 60331-1, 2, 3, 11, 21, BS 6387, BS 50200                                                                    |
| Construction                | 1. Control panel 2. Gas mixer 3. Fire resistance device 4. Fire shock device 5. Fire & water spray device       |
| Control panel               | Built in High voltage system and current system                                                                 |
|                             | IEC & BS Fire resistance test control<br>IEC & BS Fire shock test control<br>BS Fire & Water spray test control |
|                             | High voltage 0 ~ 1000V Control                                                                                  |
|                             | Current 0.25A Control                                                                                           |
| GAS Mixer                   | Built in gas mixer & mass flowmeter                                                                             |
|                             | Dimension: 800(W)X300(D)X1600(H)mm                                                                              |
| Fire resistance test device | IEC or BS Standard test device                                                                                  |
|                             | Dimension: 1700(W)X1000(D)X1300(H)mm                                                                            |
| Fire shock test device      | IEC or BS Standard test device with shock frame                                                                 |
|                             | Dimension: 1700(W)X100(D) X 1800(H)mm                                                                           |
| Fire & water spray device   | BS Standard test device with water spray system & water pump                                                    |
|                             | Dimension: 1340(W)X960(D)X1100(H)mm                                                                             |
| Heat source                 | IEC Standard : 500mm ribbon propane gas burner<br>BS Standard : 610mm ribbon propane gas burner                 |
| Ignition type               | Auto ignition                                                                                                   |
| Flowmeter type              | Mass flowmeter                                                                                                  |
|                             | AIR: 200L/min (Max.), LP GAS : 20L/min (Max.)                                                                   |
| Test temperature            | Normal ~ 1100°C (Max.)                                                                                          |
| Thermocouple type           | 1.5Ø K type Stainless steel                                                                                     |
| Fuse                        | D II 2A                                                                                                         |
| Input power                 | 220V or 380V 3Phase 50/60Hz                                                                                     |

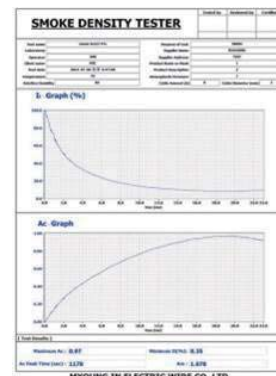
## 3M Cube Smoke Density Tester



SM-IEC61034



Control program



Test Report



Main PC Control system



Lighting System



ND Filter Calibration System



Alcohol Tray

### Introduction

- This device is equipment measuring the density of smoke emitted from combusting cables under the specific condition. The principle is as follow
- This standard define test facility to measure the smoke generated from combusting sample like optical fiber cable, wire. The penetration ratio of light can be means to compare to the other cables or to judge the suitability about the defined stadard

### Product Feature

- This is designed to measure the density of smoke which occurs when specimen with certain thickness is exposed to fire source or fire.
- It complies IEC 61034-1 & 2 condition.
- Accuracy of penetration ratio and display of smoke density is improved.
- Easy handle, design for safety

| Application                               | Specification                                                                                                 |                  |                |                   |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------|----------------|-------------------|
| Model                                     | SM-SDC3000                                                                                                    |                  |                |                   |
| Standard                                  | IEC 61034-1 & 2                                                                                               |                  |                |                   |
| Composition of Tester                     | 1. PC Control system 2. Lighting system 3. ND Filter calibration system 4. Smoke chamber 5. Data acquisition. |                  |                |                   |
| Smoke chamber material                    | Stainless steel or Sandwich panel                                                                             |                  |                |                   |
| Smoke chamber internal                    | Block color painting                                                                                          |                  |                |                   |
| Smoke chamber internal dimension (WDXH)mm | 3000(W) X 300(D) X 3000(H)mm                                                                                  |                  |                |                   |
| PC Control system                         | 19" Rack case, PC Programing test and data acquisition.<br>Dimension: 600(W)X750(D)X1800(H)mm                 |                  |                |                   |
| Data acquisition                          | Data save, monitoring and print out                                                                           |                  |                |                   |
| Lighting system                           | Standard power                                                                                                | Standard voltage | Light velocity | Color temperature |
|                                           | 100W                                                                                                          | 12V DC           | 2000 ~ 3000lm  | 2800 ~ 3200K      |
| ND Filter calibration system              | Auto calibration<br>ND Filter : 1.0 (10%), 0.3(50%)                                                           |                  |                |                   |
| Fan velocity                              | 7m <sup>3</sup> /min ~15m <sup>3</sup> /min                                                                   |                  |                |                   |
| Smoke exhaust system                      | Forced exhaust by fan motor                                                                                   |                  |                |                   |
| Ignition system                           | Auto ignition                                                                                                 |                  |                |                   |
| Input power                               | AC 220V 50/60Hz 1Phase                                                                                        |                  |                |                   |

# Fire Resistance Tester

## Vertical Tray Flame Resistance Tester



SM-850

Tray

### | Outline |

This flame resistant test is designed and produced by IEC-60332 to examine natural extinguishment and burning to top when all type of insulated metal conductor cables and continually burn it and then extinguish the flame.

### | Product Feature |

This machine tests that how fire on cable is extinguished naturally, and burns to the upper part of cable, when it is exposed to flame, then turn off flame.

### | Specification |



GAS & AIR Mixer



Dual Burner



Winch for tray

| Application     | Specification                                                                              |
|-----------------|--------------------------------------------------------------------------------------------|
| Model           | SM-850                                                                                     |
| Standard        | IEC 60332-10                                                                               |
| Construction    | 1. Control panel 2. GAS &AIR Mixer 3. Burner 4. Chamber 5. Tray & Winch                    |
| Control panel   | Velocity control : 5000 l /min                                                             |
|                 | Test time setting : 99h 59min                                                              |
|                 | Test stat & stop                                                                           |
|                 | AIR & GAS Flow value display                                                               |
|                 | Display of internal temperature of chamber                                                 |
|                 | Dimension : 600(W) X 650(D) X 1240(H)mm                                                    |
| GAS & AIR Mixer | Flowmeter type: Mass flowmeter                                                             |
|                 | AIR: 200 l /min (Max.), LP Gas: 20 l /min(Max.)                                            |
| Burner          | Ribbon gas burner (Single burner 1ea & dual burner 1ea)                                    |
| Ignition        | Auto ignition                                                                              |
| Chamber         | Material : Stainless steel                                                                 |
|                 | Dimension : 1000(W) X 4000(D) X 2000mm(H) ±100mm                                           |
| Tray            | Tray material : Stainless steel (Single tray 1ea, Dual tray 1ea )                          |
|                 | Tray dimension<br>Single type : 500 ±5mm × 3500mm±10%<br>Dual type : 800 ±5mm × 3500mm±10% |
| Winch capacity  | 600kgf(Max.)                                                                               |
| Input Power     | AC 220V 50/60Hz 1Phase.                                                                    |

## Vertical tray Flame Resistance tester (IEEE1202)



### | Product Feature |

- This equipment tests that how fire on cable is extinguished naturally nad burns to the upper part of cable when a cable is exposed to flame and turn off the flame in accordance with IEEE1202

| Application                  | Specification                                           |
|------------------------------|---------------------------------------------------------|
| Model                        | SM-IEEE1202                                             |
| Standard                     | IEEE1202                                                |
| Construction                 | Control panel, Enclosure , Dust Collection(Optional)    |
| Enclosure dimension          | 2438±25(W)X24385±25(D)X3353±25(H)mm                     |
| Enclosure material           | Concrete block : 400(W)X152(D)X203(H)mm                 |
| Exhaust duct inside diameter | 405mm ± 15mm                                            |
| Air velocity of enclosure    | 1m/sec(3.3ft/sec)                                       |
| Bidirectional probe material | Stainless steel 304                                     |
| Cable Tray dimension         | 305(W)X76(D)X2438(H)mm                                  |
| Cable Tray material          | Steel                                                   |
| Cable Tray up/down           | Winch                                                   |
| Burner                       | Ribbon type propane gas burner                          |
| Burner angle                 | Horizontal 20±2°                                        |
| Flow meter tyep              | Mass flow auto control                                  |
| PC Control system            | 19" Rack case, PC Programing test and data acquisition. |
|                              | Dimension: 600(W)X750(D)X1800(H)mm                      |
| Dust collection              | Option                                                  |
|                              | Dimension: 7350(W)X 2500(H) X 1550(D)mm                 |

# Fire Resistance Tester

## Heat Release Apparatus According to BS EN 50399

### | Introduction |

This tester evaluates the response to the cable fire resistance performance and provides data on the risk of flame propagation to fire affecting the adjacent area of the fire point from the initial stage of the flame on fire, based on the vertical fire test machine.

This test measures the occurrence of smoke in the fire response of a wire and calculates the heat emission rate (HRR), total heat release (THR), smoke generation rate (SPR) total smoke generation (TSP), flame spread (FS), and fire growth rate index (FIGRA). Enables an enhanced evaluation of the testing methods described in the existing IEC 60332-3-10.



BS EN 50399 System

### | Product Feature |

- . Designed under the BS EN 50399 standard safely.
- . Available to provide GAS/AIR automatically through Mass Flow Meter.
- . Designed program control for automatically ignite and test shut down.
- . Real time test result with Excel data.

### | Specification |



Gas extraction  
analysis rack

| Gas Process Analysis Rack System |                                                                                    |
|----------------------------------|------------------------------------------------------------------------------------|
| Measure Range                    | O2 Purity 100% (PM) / CO2 Purity 10% (IR)                                          |
| Data Logger                      | Data Acquisition / Switch Unit / Multifunction Module RS-232 / GPIB-488 Interfaces |
| Sample Gas Supply                | Oil free vacuum pump (Diaphragm)                                                   |
| Sample Gas Filter                | 0.2uF(PTFE)                                                                        |
| Digital Load Indicator           | Cap. 100kg(Max.) / Display : 5g(Min.)                                              |
| Sample Gas Extraction            | Gas Flow meter/Silica gel 500ml x 2EA / Gas Cooling System                         |
| Size                             | 600(W)×750(D)×1800(H)mm                                                            |
| Power                            | 220VAC 50/60Hz 1Phase.                                                             |

## Heat Release Apparatus According to BS EN 50399



Smoke Density Measuring System



Air & Gas Control Unit



Data Acquisition and Analysis Software

| Smoke Density Measuring System      |                                                                     |
|-------------------------------------|---------------------------------------------------------------------|
| Size                                | 400mm × 1200mm<br>(Stainless steel duct)                            |
| Sample gas flow                     | Sampling tube duct flow gas extraction<br>(Single flow type) – 10 Ø |
| Thermocouple                        | K-Type 1.5mm × 3EA                                                  |
| Calibration                         | ND Filter 0.1, 0.3, 0.5, 0.8, 1.0<br>(Smoke Calibration)            |
| Light System                        | Photo Sensor, Halogen Lamp                                          |
| Different pressure transmitter(DPT) | 16 × 32 mm / Stainless steel                                        |
| Anemometer                          | 20 Point measurement                                                |

| AIR / GAS Control Unit |                                                                                                                                        |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Flow meter             | Digital Mass Flow Meter Control                                                                                                        |
| Gas Flow(Max.)         | 1500mg/sec                                                                                                                             |
| Air Flow(Max.)         | 4000mg/sec                                                                                                                             |
| Gas/Air Mixer          | Real flow value digital indicated & Program control system<br>No correction needed by using Mass<br>Air filtering first pressure gauge |

| Data Acquisition and Analysis Software |                                                                                                                                                                                                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Calibration                            | Commissioning Kt Factor<br>Velocity Profile Factor<br>HRR 20.5kW<br>HRR 30.0kW<br>HRR 40~50kW<br>Methanol HRR<br>Heptane TSP<br>Oxygen drift Commissioning<br>Smoke Drift Commissioning<br>OD Filter<br>Routine |
| Automatic Test                         | Auto Gas & Air Ignition                                                                                                                                                                                         |
| Program Display                        | Test Time (sec)<br>Vs(m <sup>3</sup> /sec)<br>HRR (kW)<br>Qb(kW)<br>SPR(m <sup>2</sup> /sec)<br>Ignite on Time (sec)<br>Ignite off Time (sec)<br>Ignite End Time (sec)                                          |
| Gas & Air Flow Control                 | Gas & Air Program setting<br>Automatic Control                                                                                                                                                                  |
| Data Report                            | Excel Data Save<br>(3 second interval data save)                                                                                                                                                                |
| PC Specification                       | Monitor : 23Inch LED(HP)<br>Desktop : Pentium Processor(HP)<br>Inkjet Printer(HP)                                                                                                                               |

# Fire Resistance Tester

## Flame Resistance Tester



SM- 851



SM-UL1851



SM- ISO6722

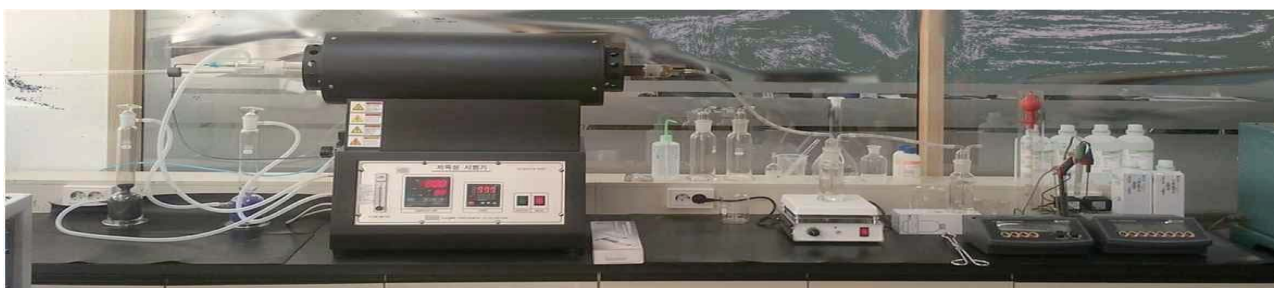


### | Product Feature |

- This machine is designed to test flame resistance of textile, wires, rubber, and synthetic resin.
- Timer of flame is attached and specimen holder is movable.
- It complies IEC 60332 and UL 1581 standard.
- The model which complies IEC 60332 has low Meter, the amount of gas/ air supply can be controlled.
- Automatically extinguished when time is up.

| Application           | Specification                                                                                                                   |                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Model                 | SM-1581                                                                                                                         | SM-851                                                                              |
| Standard              | UL 1581                                                                                                                         | IEC 60332-1                                                                         |
| Specimen holder       | Vertical & horizontal holder                                                                                                    | Vertical tong type holder                                                           |
| Flame ignition angle  | 20°                                                                                                                             | 45°±2 (Slide type)                                                                  |
| Ignition              | Auto ignition                                                                                                                   | Auto ignition                                                                       |
| Extinguishment LP GAS | Timer set up / auto extinguishment<br>Auto ignition for 15 sec. / 15 sec. off<br>Repetition ignition set-up counter is attached | Timer set up                                                                        |
| Control of flow       | Control length of flame                                                                                                         | Gas : 0-25L/min : control by regulator<br>Air : 0-1000cc/min : control by regulator |
| Burner                | LP GAS Bunsen burner                                                                                                            | Premix burner (IEC 60695-2-4-2)                                                     |
| Size of inside        | 305(W)×610(H)×355(D)mm                                                                                                          | 300(W)×450(D)×1200(H) ±25mm                                                         |
| Size of product       | 400(W)×500(D)×1300(H)mm                                                                                                         | 1600(W)×730(D)×2100(H)mm                                                            |
| Input power           | 220VAC 50/60Hz 1Phase                                                                                                           | 220VAC 50/60Hz 1Phase                                                               |

## Test on gases evolved during combustion of electric cable Tester



SM-CGT-01

### | Product Feature |

- This tester measures the amount of Halogen acid gas and conductivity of concentration of Hydrogen gas occurred from cables by radiation.
- IEC 60754-1 : It measures amount of halogen acid gas which exclude fluoride hydracids. This gas is emitted when the compound which contains halogenated polymer and halogenated additives is burnt.
- IEC 60754-2 : It measures oxidation of gas which is emitted when compound from electric or optical fiber cable was burnt.
- It can test both IEC 60754-1 & IEC 60754-2.
- User can get accurate measuring data by precise measuring

| Application         | Specification                                                                                                                                    |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Model               | SM-CGT-01                                                                                                                                        |
| Temperature control | 800~950℃                                                                                                                                         |
| Timer               | Digital (99min 59sec.)                                                                                                                           |
| Tube brazier        | Heating part 500mm, internal diameter 40mm                                                                                                       |
| Tube                | Internal diameter 38mm, length 150mm                                                                                                             |
| Combustion boat     | 98(W)×15(D)×12(D)mm                                                                                                                              |
| Gas bubble device   | Height of liquid (at end of tube) : 100~200mm from each bottle                                                                                   |
| Flow meter          | 378ml / min                                                                                                                                      |
| Safety device       | Attemperator & Circuit protection device                                                                                                         |
| Test device         | Thermocouple (3EA), beaker and glass are included                                                                                                |
| Other device        | <ul style="list-style-type: none"> <li>– Combustion boat movement system is attached</li> <li>– Air filter and dry device is attached</li> </ul> |
| Input power         | AC220V 50/60Hz 1Phase                                                                                                                            |

## Carbon Black Tester



SM-CBT

### | Product Feature |

- This tester is designed to measure the content of carbon black which contains polyethylene, polypropylene, and polybutylene. Content of carbon black is measured after pyrolysing specimen in nitrogen(N<sub>2</sub>), so this machine has electric oven and other equipment.
- Temperature is controlled by Digital P.I.D. program controller, and automatically adjust temperature.

| Application        | Specification                   |
|--------------------|---------------------------------|
| Model              | SM-CBT-60L                      |
| Temp. control type | Digital Program P.I.D. control  |
| Safety device      | Over temp. prevention device    |
| Combustion pipe    | 29(diameter) mm×600mm(length)mm |
| Temp. sensor       | K-type (CA)                     |
| Power              | AC220V 50/60Hz 1Phase           |

# Fire Resistance Tester

## Oxygen Index Tester



SM-OIT-01



SM-OIT-02

### Product Feature

- This machine is designed to measure minimum oxygen demand for combustion, and test combustibility of specimen according to concentration of oxygen.
- It complies ISO 4589-2, International Industrial Standard.
- Paramagnetic Cell is adopted; it can measure Oxygen concentration accurately, has long life, and highly reliable.
- Mass Flow controller : It controls mixture gas flow automatically
- Software : oxygen concentration is easy to read, and displayed precisely
- Specimen Holder ; both hard and soft specimen can be tested, attach & detach of specimen is easy
- DAQ system: Print out test results in accordance with each standards.
- Foot Switch Controller: Easy to handle

| Application             | Specification                                                                                             |                                                                                                           |
|-------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Model                   | SM-OIT-01                                                                                                 | SM-OIT-02                                                                                                 |
| Combustion part         | Combustion tank and test pieces supporter                                                                 |                                                                                                           |
| Combustion size         | $\varnothing 75 \pm 3 \text{mm} \times 450(\text{H}) \pm 5 \text{mm}$<br>(Heat resistance glass material) | $\varnothing 75 \pm 3 \text{mm} \times 450(\text{H}) \pm 5 \text{mm}$<br>(Heat resistance glass material) |
| Measurement Fluid meter | Oxygen : 8L/min<br>Hydrogen 11L/min<br>(Fluid control valve)                                              | Mass flow meter                                                                                           |
| Soft ware               | —                                                                                                         | —Basic loading test program<br>—DAQ test [rpgram<br>—Test calibration program                             |
| Power                   | AC 220V / 50/60Hz 1Phase                                                                                  |                                                                                                           |
| Size                    | 500(W) × 450(H) × 300(D)mm                                                                                | 600(W) × 370(H) × 280(D)mm                                                                                |
| Weight                  | 25Kg                                                                                                      | 17Kg                                                                                                      |

## Series of Fire tester In SMEM



BS EN 50399 VTFT



Vertical Flame Resistance Tester  
IEC 60331-3-10  
IEC 60331-3-22



IEC 60331 or BS 6387  
Fire Resistance Test



IEC 60331, BS 6387, BS 50200  
Shock Test



BS 6387  
Water Spray Test



Vertical tray Flame Resistance tester (IEEE1202)



Smoke Density Tester  
IEC 61034-1 & 2



Fire Resistance Tester  
IEC 60332-1



Cable Gas Tester  
IEC 60754-1 / IEC 60754-2



Oxygen Index Tester  
ISO 4589-2

# Characteristic of Material Tester

## Tensile Testing Machine



SM-TTM-1TON PC



SM-TTM-3TON PC



Monocent grip



Air grip



Extensometer grips

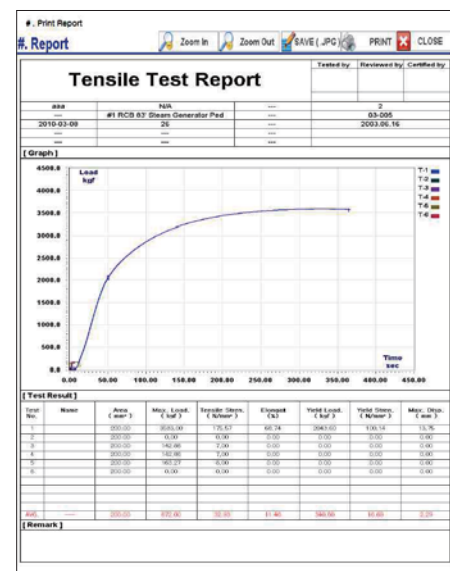
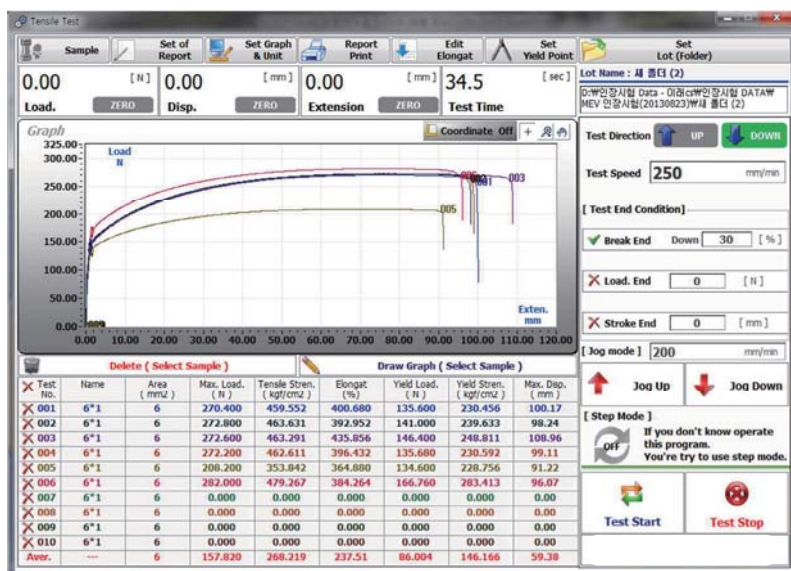
### Product Feature

- SM-TTM-100K performs tensile test on all kinds of materials like electronic elements, metal elements, rubber, cables etc. The values of weight and height are displayed.
- Value of weight and tensile is marked with digital number
- Electric drive
- Integrated body

| Application                 | Specification                           |             |                         |           |           |
|-----------------------------|-----------------------------------------|-------------|-------------------------|-----------|-----------|
| Model                       | SM-TTM-100K                             | SM-TTM-300K | SM-TTM-500K             | SM-TTM-1T | SM-TTM-3T |
| Display of weight & tensile | Digital operating and display           |             |                         |           |           |
| Capacity(Max)               | 100kg.f                                 | 300kg.f     | 500kg.f                 | 1000kg.f  | 3000kg.f  |
| Resolution                  | 1/10000                                 |             |                         |           |           |
| Degree of precision         | ± 0.5%                                  |             |                         |           |           |
| Crosshead stroke            | 600mm                                   |             |                         |           |           |
| Crosshead speed             | 1 ~ 500mm/min (Max.)                    |             |                         |           |           |
| Crosshead safety            | 2 point at upper and lower limit switch |             |                         |           |           |
| Dimension                   | 600(W)×400(D)×1630(H)mm                 |             | 700(W)×550(D)×1800(H)mm |           |           |
| Input Power                 | 220VAC 50/60Hz 1Phase                   |             |                         |           |           |

## Universal Testing Machine Program

### #. Tensile Test



## Tracking tester for TROC cable (IEC 60587)



TR 500



TR-300

### | Product Feature |

- This tester is designed to examine resistance for corrosion and tracking of specimen. After removing conductor from specimen, spill certain amount of contaminant on specimen, and connect to high voltage to test resistance.
- By controlling volume pump, contaminant is sprayed evenly.
- With the use of digital-meta, it can set the sprayed amount.  
And when the test cage door is opened, high pressure gets blocked automatically.
- The tester can be operated individually, so user can progress several test with different condition at the same time.(Above TR400)

| Application                                  | Specification                                            |          |          |          |
|----------------------------------------------|----------------------------------------------------------|----------|----------|----------|
| Model                                        | SM-TR200                                                 | SM-TR300 | SM-TR400 | SM-TR500 |
| Number of sample of Simultaneous measurement | 2EA                                                      | 3EA      | 4EA      | 5EA      |
| Test method                                  | Method 1 : Constant tracking voltage.                    |          |          |          |
| Type of pump                                 | Constant delivery pump                                   |          |          |          |
| Material of test chamber                     | Stainless steel                                          |          |          |          |
| Material of electrode                        | 0.5 t Stainless steel                                    |          |          |          |
| Material of insulating specimen support      | Teflon                                                   |          |          |          |
| Conductivity of contaminant                  | $3.95 \pm 0.05 \Omega \cdot m$ at $23 \pm 1^\circ C$     |          |          |          |
| Set up of spray test                         | Digital timer setting                                    |          |          |          |
| Test voltage                                 | 1.0 ~ 6.0kV                                              |          |          |          |
| Contaminant flow rate                        | 0.075 ~ 0.9mL/min.                                       |          |          |          |
| Pressurization of current                    | 60mA                                                     |          |          |          |
| Series resistor resistance                   | 1k $\Omega$ , 10k $\Omega$ , 22k $\Omega$ , 33k $\Omega$ |          |          |          |
| Error signal                                 | Individual signal                                        |          |          |          |
| Power                                        | 220V AC 50/60HZ 1Phase.                                  |          |          |          |

## Tracking tester of OC cable (JIS 3005)



SM- OCTR001

### | Product Feature |

- This tester is designed to examine whether leakage current or sparks occurs. Make specimen (more than 150mm), and connect standard voltage (4kV) to conductor and nonconductor. Then spray test liquid with specified conductivity for certain time, and examine leakage current and sparks.

| Application                                  | Specification                        |
|----------------------------------------------|--------------------------------------|
| Model                                        | SM-OCTR001                           |
| Number of sample of Simultaneous measurement | 1 ~ 4pcs                             |
| Material of test chamber                     | Stainless steel                      |
| Material of insulating specimen support      | Teflon                               |
| Conductivity of contaminant                  | 3000us/cm                            |
| Set up of spray test                         | Digital timer setting                |
| Spray velocity of contaminant                | 3m/sec                               |
| Distance between specimen and nozzle         | Approx. 500mm                        |
| Test voltage                                 | 4kV                                  |
| Contaminant flow rate                        | $0.5 \pm 0.1 \text{ mm/min.}$        |
| Pressurization of current                    | 60mA                                 |
| Number of times of spray                     | 10sec, spray/20 sec pause (=1 cycle) |
| Error signal                                 | Individual signal                    |
| Power                                        | 220V AC 50/60HZ 1Phase.              |

## Micro Tensile Testing Machine



SM-TT20

### | Product Feature |

- This tester is designed based on KSC3002 test standard, and for tensile test of several fine wire. It is suitable for testing micro coaxial wire.
- Precisional test: Measuring with digital number
- Electric motor drive: accurate measurement, simply use
- Integrated and solid body

| Application              | Specification           |
|--------------------------|-------------------------|
| Model                    | SM – TT20               |
| Speed of test            | 0.3mpm                  |
| Maximum tensile strength | 20kgf                   |
| Distance between grip    | 250mm(Ready status)     |
| Drive type               | Motor                   |
| Input Power              | AC 220V 50/60Hz 1Phase. |
| Display of tensile(%)    | Digital indicator       |
| Dimension                | 720(W)×260(D)×270(H)mm  |

## One Side Twisting Tester



SM-218

### | Product Feature |

SM-218 tests the torsion of wire.

It counts the number of twisting of piano wire, steel wire, and etc.

- weight can be adjusted depend on specimen. Distance of Grip is easy to set, and motor drive rotation scheme
- It can choose normal rotation and reverse rotation when do one direction torsion test
- It can set the number and speed of rotation

| Application           | Specification                          |
|-----------------------|----------------------------------------|
| Model                 | SM-218                                 |
| Type                  | Motor operated (Inverter control)      |
| Speed of revolution   | 80rpm/max                              |
| Display               | Digital indicator                      |
| Specimen material     | AL, Steel                              |
| Revolution angle      | One way type(normal/reversal rotation) |
| Interval between test | 1000mm (Max)                           |
| Weight                | 2kg × 4EA (chrome coating)             |
| Dimension             | 1700(W)×1100(H)×600(D) mm              |
| Input Power           | AC 220V 60Hz 1Phase.                   |

## Pinch tester



SM-PT110

### | Product Feature |

- This tester is designed to apply force on the insulation of low voltage cables for automobile and measure load when it breaks down.
- Take 900mm specimen and remove about 25mm length insulation of the each end of specimen.  
When it is not tensed, fix the sample with the Ø3mm steel bar vertically. Applying the weight of bar on the specimen at constant pressure speed, and measure the weight when insulation breaks
- Testing table moves every 50mm and samples rotate at 90° intervals.

| Application                | Specification                                   |
|----------------------------|-------------------------------------------------|
| Model                      | SM-PT110                                        |
| Length of specimen         | 900mm                                           |
| Test weight                | 2,3kg/0,3mm <sup>2</sup> ~ 5kg/8mm <sup>2</sup> |
| Test weight apply          | 2,3kg/min                                       |
| Measurement of weight      | AC Geared motor control                         |
| Weight apply method        | AC Geared motor control                         |
| Test stroke                | 200mm (50mm×4 step), motor driven moto driven   |
| Rotation angle of specimen | 0°, 90°, 180°, 270°, Motor driven               |
| Input power                | AC220V / 1Ø / 60Hz                              |
| Dimension                  | 700(W)×450(D)×800(H) mm                         |

## Cable Flexibility Tester



SM – ABT

### | Product Feature |

- This machine is designed to measure durability of specimen when it is twisted.  
Among cable, wire and code which insulate and sheath with several rubber & plastic material which meet KS C 3004, the specimen is cabtire cable.
- It measures damages on specimen (breakdown, cracks, disconnection of conductor wire etc.) after rotor rotates at constant speed for regulated numbers
- The machine stops automatically, after operates number of test which is designated by digital counter.

| Application                                                | Specification                                            |
|------------------------------------------------------------|----------------------------------------------------------|
| Model                                                      | SM- ABT                                                  |
| Distance between rotator center and fixed vice of specimen | 200 or 300mm                                             |
| Specimen hole                                              | 200, 300mm                                               |
|                                                            | 100mm : Ø15, Ø20, Ø25, Ø30<br>150mm : Ø10, Ø12, Ø15, Ø20 |
| Test speed                                                 | 20 times/min                                             |
| Counter                                                    | Digital Counter                                          |
| Drive motor                                                | 0,2 kW                                                   |
| Power                                                      | AC 200V / 60Hz /1phase                                   |
| Weight                                                     | 130kg                                                    |

## Cord Flexible Tester



SM-CDFLT03



SM-CDFLT 06

### | Product Feature |

This tester is used for bending endurance testing of the code according to the specifications of KS, IEC ISO, UL, etc. It is required to automatically stop when the specimen is shorted to the left and right angles by holding a constant length of the specimen to and from the movable plate.

| Application                                  | Specification                               |               |
|----------------------------------------------|---------------------------------------------|---------------|
| Model                                        | SM-CDFLT 03                                 | SM-CDFLT 06   |
| Standard                                     | ISO 60227-2                                 | UL 2556, UL62 |
| Driving type                                 | Motor driving                               |               |
| Number of sample of Simultaneous measurement | 3 pcs                                       | 6 pcs         |
| Clamp length                                 | 0~500mm                                     |               |
| Rotating speed                               | 60/Min                                      | 12/Min        |
| Curvature radius                             | r 2.5                                       | r 2,5         |
| Weight                                       | 500g                                        | 110g          |
| Test Angle                                   | Left & right Each 45°, 60° 90°              |               |
| Test times                                   | Digital counter ( Possible 999999 setting ) |               |
| Power                                        | 220VAC/50/60Hz 1phase                       |               |

## Cable Endurance tester



SM-314FST



SM-314FST-6

### | Product Feature |

- This moving bending tester is for electronic equipment under AC 450V/750V  
It moves cable with insulation and sheathing or usage cable left and right to test about short circuit of conductor and disconnection of cable.  
It complies KSC IEC 60227-2.
- Automatic test is possible by Digital Counter setting
- Several teste can be conducted by counter and speed setting
- The m/c is easy to use, since it is suitable for continuous test and operate for long hours.

| Application           | Specification                                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Model                 | SM-314FST                                                                                                                             |
| Controller            | Digital voltage meter, A-meter, counter                                                                                               |
| Detecting function    | Display defects after test                                                                                                            |
| Current/voltage       | Applied current : 2 core & 3 core cable. 4 core & 5 core cable<br>Applied voltage : 2 core cable – 230 VAC, more than 2 core – 400VAC |
| Weight                | 0.5kg, 1kg, 2kg – each 2EA                                                                                                            |
| Pulley movement speed | 0.33m/sec                                                                                                                             |
| Pulley                | ø60, ø80, ø120, ø160, ø200 each 4EA                                                                                                   |
| Dimension             | 1500(D)×600(W)×1200(H) mm                                                                                                             |
| Power                 | 220VAC 50/60Hz 3Phase                                                                                                                 |

## Hot Press



SM-HP50T-A



SM-HP30T-M

### | Product Feature |

- SM-HP-A is designed for forming test of resins, plastics, and rubber.
- User melting by electronic heating, compression by applying oil pressure, cooling by hydro-cooling, so it has firm and excellent performance.
- It consists of pressure equipment, heating/cooling equipment, and pressure/temperature controller etc.

| Application              | Specification                                |
|--------------------------|----------------------------------------------|
| Model                    | SM-HP-M                                      |
| Type                     | Hydraulic pressing (Electric Heating System) |
| Temperature range        | Room temperature                             |
| Temperature controller   | Digital P.I.D controller                     |
| Normal pressure          | 600kg/cm <sup>2</sup>                        |
| Hydraulic jacking device | 30Ton • f                                    |
| Size of Pressure plate   | 300×300 (mm)                                 |
| Compression stroke       | 100mm (Piston Ram Stroke)                    |
| Power                    | AC 220V / 60Hz / 1ø                          |
| Dimension                | 750W×300D×1000H (mm)                         |
| Weight                   | 250kg                                        |

## Skiving Machine



SM-SK01

### | Product Feature |

- This equipment can process specimen with high accuracy in thickness and quality.
- Users can control cutting speed.
- Perfect manufacturing specimen with nearly no changes on the quality of material.
- It can adjust R.P.M. accurately with inverter
- Semi-permanent cutter; easy to manage
- Less noise, simply designed
- It can make specimen with thickness which user wants at a time

| Application                     | Specification            |
|---------------------------------|--------------------------|
| Model                           | SM-SK01                  |
| Specimen cutter                 | Fixed blade              |
| Specimen thickness              | 0.8 ~ 2mm                |
| Material                        | PVC, EXCEL PE, RUBBER    |
| Display of specimen thickness   | Analogue dial gauge      |
| Input power                     | AC 220V 50/60Hz 1Phase   |
| Specimen movement speed control | Inverter control type    |
| Specimen movement method        | Motor drive method       |
| Dimension                       | 1000(W)×600(D)×1200(H)mm |
| Weight                          | 450kg                    |

# Characteristic of Material Tester

## Polishing Machine



SM-PMD-2H



SM-PMS-2H



SM-PMS-SHA

### | Product Feature |

- This tester is designed to polish the surface of specimens at lab or field.
- Users can control rotational speed.

| Application            |                        | Specification          |                        |
|------------------------|------------------------|------------------------|------------------------|
| Model                  | SM-PMS -1H             | SM-PMS-2H              | SM-PMS-2HA             |
| Drive Motor            | AC motor ¼HP           | AC motor ¼HP           | AC motor ½HP           |
| Type                   | 1 continuous           | 2 continuous           | 2 continuous           |
| Speed control          | 1750 rpm(Max.)         | 1750 rpm(Max.)         | 1750 rpm(Max.)         |
| Speed variation method | Digital Speed meter    |                        | Volume variation type  |
| Semi auto jig          | Option                 |                        |                        |
| Feed pump              | Option                 |                        |                        |
| Sand paper             | 600# sand paper        |                        |                        |
| Rotation hall          | 200mm                  |                        |                        |
| Input power            | AC 220V 50/60Hz 1Phase |                        |                        |
| Dimension              | 400(W)×555(D)×350(H)mm | 794(W)×555(D)×350(H)mm | 900(W)×500(D)×800(H)mm |

## Dumbbell Specimen cutter



SM- DC01



SM-DC02

### | Product Feature |

- SM-DC01 is designed to cut tensile and tear specimen models with quick cutting method.  
This can be used for cutting rubber, plastics, film, paper, fiber and other materials in accordance with standards of various material.
- SMEM has various model and produce customized model.
- The cutter is designed in detail and compliant with the standard. The surface of cutter is treated by heating and it is easy to change and assemble depend on purpose.

| Application      | Specification               |
|------------------|-----------------------------|
| Model            | SM-DC01                     |
| Type             | Lever type                  |
| Applied specimen | Rubber, Resin, fabric, etc. |
| Weight           | 30Kg                        |
| Dimension        | 400(W)×450(D)×600(H)mm      |

## Strip Force Tester



SM-SP01

### | Product Feature |

This tester is designed to test strip force of automobile wire. Digital indicator is installed, so it can measure value accurately.

| Application    | Specification              |
|----------------|----------------------------|
| Model          | SM-SP01                    |
| Capacity(Max.) | 500N                       |
| Test method    | Motor operated             |
| Test Stroke    | Max. 150mm                 |
| Test speed     | 300 mpm                    |
| Speed control  | Speed volume variable type |
| Motor          | AC Geared Motor 25W        |
| Counter        | Digital Indicator          |
| Power          | AC 220V 50/60Hz 1Phase     |

MEMO

# Abrasion Tester

## Knife Abrasion Tester



SM-KAT02

### | Product Feature |

- This consists of a device designed to abrade the surface of the insulation in both directions along the longitudinal axis of the test sample and a counter for recording the numbers of cycles to failure. It shall be controlled so that when the needle abrades through the insulation and makes contact with the conductor, the machine will stop operating.

| Application            | Specification                                        |
|------------------------|------------------------------------------------------|
| Model                  | SM-KAT02                                             |
| Abrasion head          | Needle                                               |
| Load                   | $4 \pm 0.05\text{N}$ , $7 \pm 0.05\text{N}$          |
| Diameter of needle     | $0.45 \pm 0.01\text{mm}$ or $0.25 \pm 0.01\text{mm}$ |
| Frequency              | $55 \pm 5$ cycle/min                                 |
| Speed control          | Digital speed controller                             |
| Length of abrasion     | $15.5 \pm 1\text{mm}$                                |
| Displacement of needle | 100mm                                                |
| Motor                  | AC Speed Controller Motor 25W                        |
| Power                  | AC 220V/60Hz/1Ø                                      |
| Dimension              | 900W x 450D x 500H(mm)                               |
| Weight                 | 50kg                                                 |

## Abrasion Tester



IEC 60229 Abrasion Tester



UL 2556 Abrasion Tester

## Printing Abrasion Tester UL 1581



SM-DIP-P2



SM-DIP-P2

### | Product Feature |

- SM-DIP-P2 is a surface printing abrasion tester complied with UL1581 standard.
- This test rubs specimen with felt which is weighted regulated load, and it makes fiction with the printed side of sample and checks rubbing off, stain, abrasion, and etc.

| Application        | Specification                             |
|--------------------|-------------------------------------------|
| Model              | SM-DIP-P2                                 |
| Number of specimen | 2 pcs                                     |
| Craft Felt         | 30% Wool (Prepared by customer)           |
| Abrasion Stroke    | 250mm(Max.)                               |
| Moving Speed       | 3 times / (5~10)sec                       |
| Speed control      | Speed volume variable type                |
| Test weight        | 450g $\pm$ 5g (4.45N $\pm$ 0.06N)         |
| Counter            | Attach Digital Counter                    |
| Dimension          | 890(W) $\times$ 440(D) $\times$ 1600(H)mm |
| Input Power        | 220 VAC 60Hz 1Ph                          |

## Sandpaper Abrasion Tester ISO 6722



SM-LVCAT1900

### | Product Feature |

- Sandpaper Abrasion Tester is designed under ISO 6722 standard. It fixes 1000mm long specimen and make it to touch #150 G Abrasion tape. Then weighs regulated load on it, and measure length when conductor and tape is touched each other. In this way, check the measured value of specimen 8 times and calculate its average(A1). Compare the average(A1) with next 8 measured values and average(A2) the values which is below the existing average(A1). Settle A2 as the abrasion resistance.

| Application                      | Specification                        |
|----------------------------------|--------------------------------------|
| Model                            | SM-LVCAT1900                         |
| Length of specimen               | 1000mm                               |
| Test distance measurement device | Digital counter 6 digits with buzzer |
| Abrasion tape                    | #150J, pitch 75mm                    |
| Motor                            | AC Geared Motor, 35W                 |
| Parts                            | Tape 5 pcs.                          |
| Weight                           | 40kg                                 |

## Air Changing Oven



SM-RAT4000S

### | Product Feature |

- This tester complies with IEC. 68011-1-2 and is air-circulating tester that tests aging of rubber or PVC compound.
- The internal of Chamber is designed to maintain designated temperature.
- Digital P.I.D. Controller is equipped; control temperature precisely
- Controlling temperature distribution and uniformity with a fan in Chamber
- Over temperature sensor and overload circuit breaker are equipped; Prevent accidents caused by high temperature.
- Can add equipment which control amount of ventilation, since it affects to Heat aging test.

| Application                           | Specification                                  |
|---------------------------------------|------------------------------------------------|
| Model                                 | SM-RAT4000S                                    |
| Temperature control range             | Room temperature ~ +300℃                       |
| Temperature control method            | Digital P.I.D Controller                       |
| Degree of precision of emperature     | ±1℃                                            |
| Type of temperature sensor            | K-Type                                         |
| Capacity of heater                    | 4KW                                            |
| Control met hod of substitution ratio | LCD touch panel screen                         |
| Recorder                              | Recorder / replacement ratio printer           |
| Heater control method                 | Current output SCR control                     |
| Speed                                 | 5~8 rpm                                        |
| Material of inside                    | SUS 304                                        |
| Substitution                          | 8~20 times (IEC60811) / 100~200 times (UL1581) |
| Air circulation method                | Heating air circulation type STS fan           |
| Size of Chamber                       | 500(W)×500(D)×600(H)mm                         |
| Size of outside                       | 1100(W)×700(D)×1480(H)mm                       |
| Input power                           | AC 220V 60Hz 1Phase                            |

## Aging Test Chamber



SM-RAT4000

### | Product Feature |

- Digital P.I.P. Controller is equipped; control temperature precisely
- Control temperature distribution and uniformity with a fan in Chamber
- Over temperature sensor and overload circuit breaker are equipped; Prevent accidents caused by high temperature.
- Installing controller of ventilation depending on different specification; Ventilation influences on thermal aging test results

| Application                  | Specification                                    |
|------------------------------|--------------------------------------------------|
| Model                        | SM-RAT4000                                       |
| Temperature control range    | Room temperature ~ +300℃                         |
| Temperature controller       | Digital P.I.D Controller (Touch Screen / Option) |
| Precision of temperature     | ±1℃                                              |
| Temperature sensor           | K ype                                            |
| Heater capacity              | 4KW                                              |
| Digital temperature recorder | Yokokawa (Option)                                |
| Heater control method        | SCR control                                      |
| Speed of Rotating table      | 5~8 rpm                                          |
| Specimen rotating table      | 2 layer hanger for test sheet                    |
| Material of inside           | SUS 304                                          |
| Air circulation method       | Heating air circulation type STS fan             |
| Size of inside chamber       | 500(W)×500(D)×600(H)mm                           |
| Size of product              | 1100(W)×700(D)×1480(H)mm                         |
| Input power                  | AC 220V 60Hz 1Phase                              |

## Oxygen Pressure Tester



SM-OPT-2.1



### Product Feature

- This Oxygen pressure tester test aging of cable insulation by applying pressure of high pressure oxygen in constant temperature.
- Digital manometer controls pressure, and tests accurately.
- Digital P.I.D Controller controls temperature precisely.
- Stainless Chamber; durable and corrosion resistant
- Over temperature sensor and Over-Pressure interception device is installed; Prevent accidents caused by high temperature or pressure.

| Application            | Specification                                                   |
|------------------------|-----------------------------------------------------------------|
| Model                  | SM-OPT-2.1                                                      |
| Display of detection   | Digital indicator                                               |
| Temperature of inside  | Room temperature ~ 200℃(Max.)                                   |
| Usable pressure        | 2.1, ±0.7MPa (Max.)                                             |
| Control of temperature | Digital P.I.D. controller                                       |
| Material of inside     | Stainless steel                                                 |
| Door                   | Flange type and screw locking device                            |
| Safety device          | Timer, High temperature prevent ion sensor, Air discharge valve |
| Capacity of Heater     | 220V 1KW                                                        |
| Input power            | AC 220V 50/60Hz 1Phase                                          |
| Size of inside         | ∅150×450mm                                                      |
| Size of outside        | 650(W)×550(D)×1275(H)mm                                         |

## Air Pressure Tester



SM-AR-220T

### Product Feature

- This machine tests the aging state of cable insulation under constant pressure and temperature.
- Digital manometer controls pressure and conducts test precisely
- Digital P.I.D Controller controls temperature precisely.
- Stainless Chamber; durable, corrosion resistant
- Over temperature sensor and Over-Pressure interception device is installed; Prevent accidents caused by high temperature or pressure

| Application            | Specification                                         |
|------------------------|-------------------------------------------------------|
| Model                  | SM-AR-220T                                            |
| Display of detection   | Digital indicator                                     |
| Temperature of inside  | 150℃ (Max.)                                           |
| Usual pressure         | 10kgf.(Max.)                                          |
| Control of temperature | Digital PID control                                   |
| Material of inside     | SUS304                                                |
| Door                   | Flange type and screw locking device                  |
| Safety device          | Digital timer, over-heat blocking sensor, Safety vent |
| Capacity of heater     | 220V 1KW                                              |
| Input power            | AC 220V 50/60Hz 1 Phase                               |
| Size of inside         | ∅150×450mm                                            |
| Size of outside        | 600(W)×450(D)×1200(H)mm                               |

# Chamber

## Parallel Plate Plastometer



SM-PPT10-1



SM-PPT10-1

### | Product Feature |

- This machine measures decreasing rate of thickness of rubber plastic cable specimen which is applied heat and weight during constant time. It complies with IEC standard.
- High degree of precision of load by using real load method
- Temperature of inside of the Chamber is maintained stably
- Thermostat is easy to set and check the temperature; Digital P.I.D. controller which has a built in MICOM is used
- This machine uses direct heating method.
- Heater and fan are installed inside of chamber; thermal conduction is fast, and temperature distribution is uniform.

| Application                       | Specification                                       |                          |
|-----------------------------------|-----------------------------------------------------|--------------------------|
| Model                             | SM-PPT10-1                                          | SM-PPT10-3               |
| Type                              | 1 ~ 3 continuous                                    | 3 continuous             |
| Pressurize method                 | Weight pressurize method                            |                          |
| Test weight range                 | 0 ~ 20kg                                            |                          |
| Transformation measurement device | Digital dial gage 0,01 X 10mm                       |                          |
| Head block                        | 0.7±0,01mm                                          |                          |
| Temperature control range         | Room temperature ~ ±250℃                            |                          |
| Temperature control method        | Digital P.I.D Controller                            |                          |
| Material inside                   | Stainless steel 304                                 |                          |
| Material outside                  | SS41 Power coating                                  |                          |
| Insulator                         | Glass wool                                          |                          |
| Air circulation device            | Heating air circulation type SUS sirocco fan        |                          |
| Input power                       | 220VAC 60Hz 1Phase                                  |                          |
| Safety device                     | Over temperature sensor, Overload circuit breaker   |                          |
| Recorder                          | 6 multipoint digital temperature recorder(Optional) |                          |
| Dimension                         | 1200(W)×600(D)×800(H)mm                             | 1200(W)×700(D)×1680(H)mm |

## Heater Stability Tester



SM-AR-220T

### | Product Feature |

- This machine is designed to test thermal stability of various specimen like electronic/metal parts, rubber, cable, and etc. It keeps the temperature of water and oil in chamber.
- Digital P.I.D. Controller equipped; control temperature precisely.
- The inside fan of chamber controls distribution of temperature, and keeps uniformity.
- Over temperature sensor is installed; Prevent accidents caused by high temperature.
- Stainless Chamber; durable, corrosion resistant
- Anti fluid tank of inside of constant-temperature is detachable; convenient to clean
- Mobile sensor for display of temperature is attached on anti fluid tank ; easy to control temperature.

| Application            | Specification                      |
|------------------------|------------------------------------|
| Model                  | SM-SH568                           |
| Temperature            | Room temperature ~ 250℃ (Max)      |
| Material of inside     | SUS 304 Stainless steel            |
| Temperature controller | P.I.D controller                   |
| Capacity of heater     | 200 VAC, 260 W                     |
| Input power            | AC220V 50/60Hz 1 Phase             |
| Test beaker            | 6EA (5ø×110mm)                     |
| Safety device          | High temperature prevention sensor |
| Dimension              | 300(W)×300(D)×380(H)mm             |

## OIL BATH



SM-OB01



35m water bath for High voltage test in water

### | Product Feature |

- This machine is designed to test various specimen like electronic/metal parts, rubber, cable, etc. It keeps the temperature of water and oil in chamber.
- Digital P.I.D. Controller is equipped; control temperature precisely.
- The inside fan of chamber controls distribution of temperature, and keep uniformity.
- Over temperature sensor is installed; Prevent accidents caused by high temperature.
- Stainless Chamber; durable, corrosion resistant
- Anto fluid tank of inside of constant-temperature is detachable; convenient to clean

| Application            | Specification                       |
|------------------------|-------------------------------------|
| Model                  | SM-OB01                             |
| Test temperature       | Ordinary temperature ~ 200°C (Max.) |
| Material of inside     | SUS 304 Stainless steel             |
| Oil circulation method | Agitator                            |
| Temperature controller | P.I.D controller                    |
| Input power            | AC 220V 50/60Hz 1Phase              |
| Teste glass tube       | 6EA (4 $\varnothing$ × 350 mm)      |
| Size of inside         | 300(W) × 430(D) × 430(H)            |
| Size of outside        | 750(W) × 650(D) × 400(H)            |

## Brittleness Temperature Tester



SM-CBT-60L



SM-BT

### | Product Feature |

- This tester is designed for testing the cold tolerance of rubber, plastic PVC, hardness/softness Polyvinyl Chloride compound and etc., and it complies with KS, JIS, ASTM standard.
- Test : Spinning hammer hits the specimen with constant speed. The use of liquid nitrogen and freezer allows it to maintain the ultralow temperature.
- Test temperature can be set  $\pm 0.5^{\circ}\text{C}$  from setup temperature.

| Application            | Specification                |
|------------------------|------------------------------|
| Specimencount          | 5hanging                     |
| Hammer                 | Motor driving                |
| Striking motor         | AC 220V 300W                 |
| Striking speed         | 2 $\pm$ 0.2m/sec             |
| Striking edge top      | R 1.6 $\pm$ 0.1mm            |
| Striking distance      | 6.4 $\pm$ 0.2mm              |
| Chamber mixingmotor    | 40W                          |
| Temperature range      | Normal ~ -60°C               |
| Temperature controller | P.I.D Controller             |
| Heater                 | 1000W                        |
| Cooling method         | Ethanol 20 Liter             |
| Refrigerator           | 1HP (1st:R-22 & 2nd:R-23)    |
| Power                  | AC 220/380V 60Hz 3Phase      |
| Dimensions             | 1000(W) × 800(D) × 1600(H)mm |

# Chamber

## Humidity Cycle Chamber



SM-650



### | Product Feature |

- This machine is designed to test/develop various materials (semiconductor, electronic/metal parts, rubber, etc.) under change of temperature humidity, low temperature, or rapid cooling condition.

| Application                     | Specification                                                                                                                     |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Model                           | SM-650                                                                                                                            |
| Test temperature                | -50 ~ +150°C (Display 0.1°C)                                                                                                      |
| Test humidity                   | 35 ~ 98% RH                                                                                                                       |
| Control of temperature/humidity | ±1.5°C, ±3% RH                                                                                                                    |
| Cooling method                  | 1HP X 2SET (enclosed cascade system)                                                                                              |
| Size of inside                  | 500(W)×500(D)×600(H)mm                                                                                                            |
| Material of inside              | SUS 304 Stainless steel                                                                                                           |
| Material of outside             | SS41 powder coating                                                                                                               |
| Temperature sensor              | PT100 Ω                                                                                                                           |
| Temperature controller          | Digital P.I.D controller (touch screen /option)                                                                                   |
| Temperature record device       | Recorder / Yokokawa (option)                                                                                                      |
| Heater                          | Stain less steel screw shaft heater                                                                                               |
| Circulation method              | Blower Fan Motor                                                                                                                  |
| Input power                     | AC 220V 50/60Hz 1 Phase                                                                                                           |
| Safety device                   | Power supply breaker, Attenuator, refrigerator overload & overcurrent circuit breaker, Fan motor overload breaker, Buzzer & alarm |

## Low Temperature Chamber



### | Product Feature |

- This tester is designed for low temperature test.
- This machine can refrigerate specimen quickly with binary refrigerating method; it can test specimen in ultralow temperature.

| Application                  | Specification                                        |
|------------------------------|------------------------------------------------------|
| Model                        | SM-LTC60L                                            |
| Type                         | Digital temperature set up type                      |
| Material of chamber inside   | Stainless steel                                      |
| refrigerator                 | 1.5HP×2ea air cooling type                           |
| Temperature range            | -60 ~ 100°C (Max.)                                   |
| Temperature controller       | Digital temperature controller Touch screen (option) |
| Temperature recorder(option) | Digital temperature recorder                         |
| Dimension                    | 500(W)×500(D)×600(H) mm                              |
| Weight                       | 120kg                                                |
| Input power                  | 220VAC 50/60Hz 1 Phase                               |

## Ozone Aging Test Chamber



SM-OAT200



SM-OAT100

### Product Feature

- This machine is designed to measure thermal degradation of various specimen in the air which contains low concentration ozone.
- This machine complies international industry standard KSM 6518, JIS K-6301, ASTM D-1149, ISO-1431.
- Digital control with ultraviolet absorption type ozone densitometer
- Adopting the automatic record, temperature and ozone test status are recorded.
- Temperature controller uses Digital PID controller which has built-in MICOM; set and check of temperature is easy.
- Heater of inside of chamber increases temperature. It controls temperature distribution and uniformity with fans in Chamber.

| Application                         | Specification                           |
|-------------------------------------|-----------------------------------------|
| Model                               | SM-OAT200                               |
| Ozone concentration                 | 0 ~ 200 ppm                             |
| Display of concentration            | Digital control & display               |
| Range of temperature                | 0 ~ 70°C with cooling system            |
| Temperature controller              | Digital P.I.D control                   |
| Capacity of heater                  | 2000W                                   |
| Ozone generator                     | Ozone(O <sub>3</sub> ) lamp             |
| Concentration measurement & control | Digital P.I.D control by Ozone analyzer |
| Static tensile device               | 0~100% tensile, 12 continuous           |
| Dynamic tensile device              | 60ppm, 12 continuous                    |
| Rotation number of specimen         | 5 ~ 8rpm                                |
| Input power                         | 220VAC, 50/60 Hz 1ph                    |
| Recorder                            | 6-point recorder(Optional)              |
| Size of inside                      | 600(W)×600(D)×600(H) mm                 |
| Size of outside                     | 1440(W)×770(D)×1860(H) mm               |
| Weight                              | 120 kg                                  |

# Chamber

## Low Temp/Bending/Shock/Elongation



SM-LT BSE



SM-LT BSE-PC



Bending Tester

- 〈Low temperature coiling〉
- ① Type : Motor drive type
  - ② Turn : Screw movement method
  - ③ Speed : 12 rpm
  - ④ Power : 220VAC 1Ph
  - ⑤ Axis of rotation : 10 $\phi$ , 20 $\phi$ , 25 $\phi$ , 30 $\phi$ , 40 $\phi$  each 1EA



Shock Tester

- 〈Low temperature shock〉
- ① Type : free-fall
  - ② Control : manual lever
  - ③ Distance of fall : 100mm
  - ④ Hammer : 1400g, 1150g, 900g, 650g, 500g, 400g, 200g each 1EA(Hammer rail 1EA)

※ This machine is made for bending, shock test under low temperature



Hammer

| Application                   | Specification                     |
|-------------------------------|-----------------------------------|
| Model                         | SM-LT BSE                         |
| Type                          | Digital temperature set up type   |
| Material of chamber inside    | Stainless steel                   |
| refrigerator                  | 2HP × 1ea air cooling method      |
| Temperature recorder (option) | Digital recorder                  |
| Heater                        | 1.2kW                             |
| Chamber size                  | 500(W) × 480(D) × 650(H)mm        |
| Product size                  | 1,380(W) × 1,470(D) × 1,770(H) mm |
| Standard                      | IEC-60811                         |
| Option                        | PC & Printer (Elongation print)   |
| Input power                   | 220V AC 50/60Hz 1 Phase           |

## Hot Set Tester



SM-SHT250R



Hot Set Sensor

### Product Feature

- This machine is only for Hot set test. Without opening the door, user can change the length of specimen, or measure it with laser point.
- Digital P.I.D. Controller equipped; control temperature precisely.
- Inside fan of chamber controls temperature and maintains distribution and uniformity of it.
- Attenuator and overload circuit breaker are installed; Prevent accidents caused by high temperature.

| Application               | Specification                                                                                        |
|---------------------------|------------------------------------------------------------------------------------------------------|
| Model                     | SM-HST250R                                                                                           |
| Temperature control range | Room temperature $\sim +250^{\circ}\text{C}(\text{Max.}) \pm 1\%$                                    |
| Temperature control       | Digital P.I.D controller                                                                             |
| Temperature sensor type   | K Type                                                                                               |
| Capacity of heater        | 3.2 KW                                                                                               |
| Record er                 | Yokokawa 6 multipoint recorder (option)                                                              |
| Heater control            | Current output SCR control                                                                           |
| Material of inside        | SUS 304                                                                                              |
| Air circulation           | Heating air circulation type STS fan                                                                 |
| Size of chamber           | 500(W) $\times$ 600(H) $\times$ 500(D) mm                                                            |
| Size of outside           | 1420(W) $\times$ 1550(H) $\times$ 745(D) mm                                                          |
| Input power               | AC 220V 50/60Hz 1 Phase                                                                              |
| Safety device             | Attenuator, Timer, Buzzer, Height gauge laser point<br>(for check specimen length of chamber inside) |

## Degree of Cross– linking Tester



Fume Hood



### Degree of cross–linking tester | Product Feature |

- This machine is designed to measure cross–linking degree of cross–linking polyethylene pipe, polyethylene, and cross–linking plastic which are used as water pipes.
- It measures the amount of cross–linking polyethylene that doesn't melt in boiling xylene. User has to take certain amount of specimen and weigh it accurately to 0.1mg, then extract cross–linking polyethylene from Soxhlet apparatus for certain amount time. Afterward, dry it in hot dryer machine, then measure the mass after natural cooling. Convert the mass which is before test and measured mass into a percentage, and it become cross–linking degree(gel–fraction).

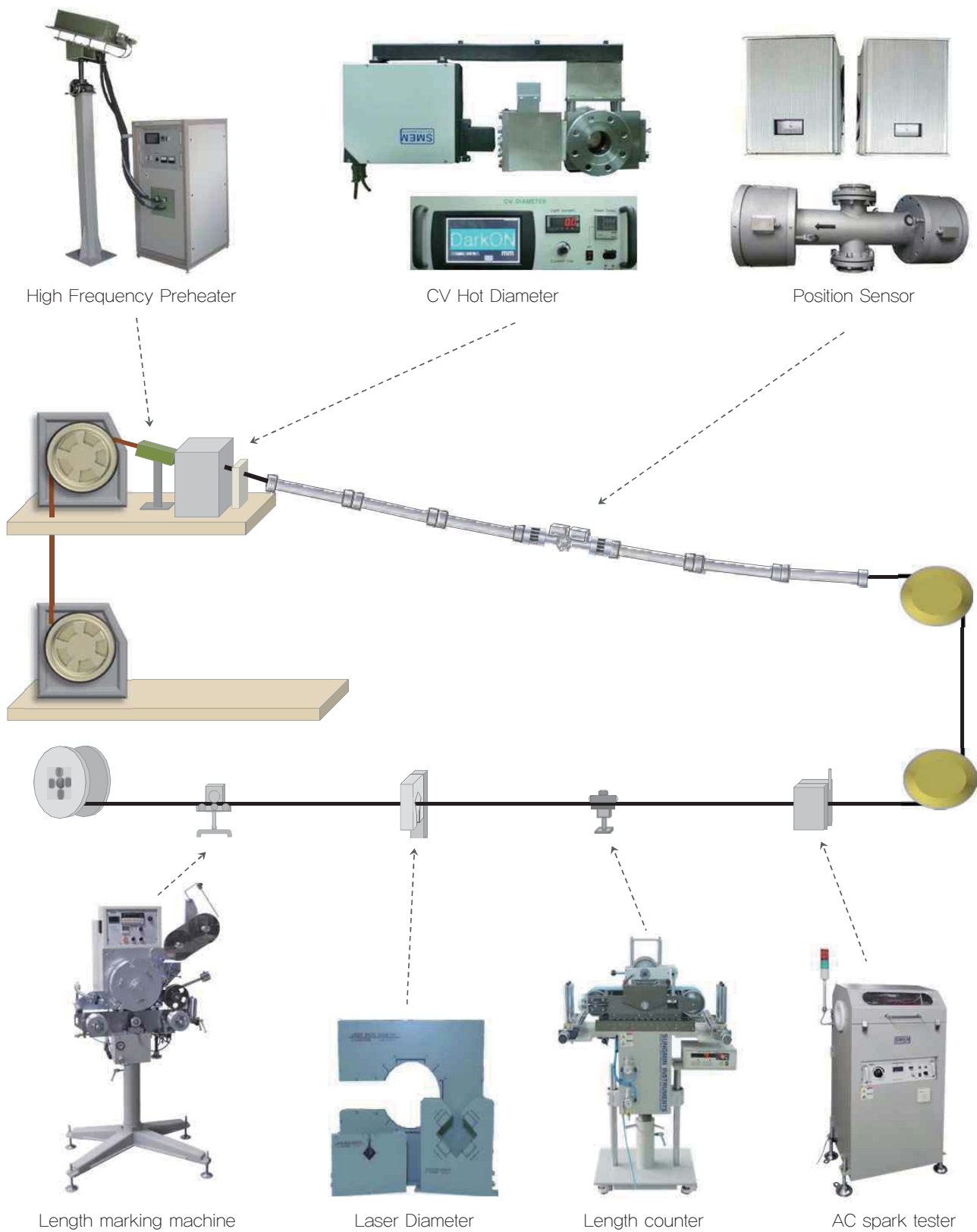
| Application            | Specification                 |
|------------------------|-------------------------------|
| Model                  | SM–SA03                       |
| Extraction device      | Soxhlet Apparatus             |
| Range of temperature   | Room temperature ~ 450°C      |
| Temperature controller | Digital P.I.D Controller      |
| Mantle                 | Heating mantle 250mml         |
| Flask                  | 250mml                        |
| Extraction filter      | Stainless Screen Filter       |
| Extraction solvent     | Xylene, $C_6H_4(CH_3)=106.17$ |
| Power                  | AC 220V / 60Hz / 1 Phase      |
| Dimension              | 200(W)×200(L)×650(H) mm       |
| weight                 | 20kg                          |



MEMO

# Cable In-line Tester

## CV Line Conception Diagram



# Cable In-line Tester

## High Frequency Spark tester



SM-15HF-16 STAND TYPE  
SM-15HF-16



SM-15HFN



SM-HFR  
Remote control unit

### Product Feature

- Spark tester takes a essential part of production. High Frequency Spark Tester which accomplished the highest reliability detects flaws with 3kHz high frequency.  
High speed operation can be detect even with small detecting element.  
It now covers drawbacks of existing large detecting element of 60Hz.
- Easy control
- Compact design(360X105X300)
- Controller and detector can be install separately it on Ext-machine.
- Horizontally moveable detecting element, easy to adjust with the Line center
- Detector is resistant to corrosion and rust; material is stainless steel

| Application                  | Specification                                                                                                                                  |                        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Model                        | SM-15HF-16                                                                                                                                     | SM-15HFN               |
| Controller & Detector type   | Separate type                                                                                                                                  | Solid bottom type      |
| Output power                 | 100~15000V                                                                                                                                     |                        |
| Output frequency             | 2500~3500Hz(according to Load capability)                                                                                                      |                        |
| Load current                 | Resistibility 4mA, capacitive 35mA                                                                                                             |                        |
| Display of voltage           | 4 Digits LED                                                                                                                                   |                        |
| Display of number of defects | 5 Digits electrode mechanical counter                                                                                                          |                        |
| Line speed                   | Max. 1300mpm (when comply UL standard)                                                                                                         |                        |
| Display of defects           | LED lamp, alarm unit                                                                                                                           |                        |
| Display of point of contact  | Spark faults relay 250V 5A, Excess faults relay 250V 5A                                                                                        |                        |
| Interlock setting            | Output voltage and Reset can be controlled from the outside                                                                                    |                        |
| Data print                   | It can connect with Length counter; can print out detecting point, line speed, and time.<br>It can be used as data for production management . |                        |
| Input power                  | 200/220VAC 50/60Hz 1Phase 200VA                                                                                                                |                        |
| Weight                       | Controller + Detector = 15.5Kg                                                                                                                 | 18kg                   |
| Detector                     | 300(W)×170(H)×280(D)mm                                                                                                                         | 300(W)×290(H)×340(D)mm |
| Diameter of cable            | 0.5 ~ 16mm                                                                                                                                     |                        |
| Type of detecting            | Beads chain                                                                                                                                    |                        |

## AC Spark Tester



SM-15ST40



SM-15ST120



SM-30ST180

### Product Feature |

- AC Spark Test is installed in cable production line to detect the insulation defect of cables. It sparks when it spots insulation defects which is caused by bare wire, pin-whole, wound wire, foreign material, and etc.
- Stand Type(SM-15ST40) is easy to operate as its controller is compact.  
510(W)×210(H)×330(D) mm
- Controller and detector can be separated to install it on Panel or machine.
- Detector is resistant to corrosion and rust; material is stainless steel
- Horizontally moveable detecting element; easy to adjust with the line center

| Model        | Dimension<br>(W)×(D)×(H) mm | Diameter of cable | Test voltage | Length of electrode |
|--------------|-----------------------------|-------------------|--------------|---------------------|
| SM-15ST40    | 500×300×1170                | 20mm              | 15kV 50/60Hz | 350mm               |
| SM-15ST120   | 600×480×1250                | 80mm              | 15kV 50/60Hz | 250mm               |
| SM-15ST180   | 600×480×1250                | 150mm             | 15kV 50/60Hz | 250mm               |
| SM-30ST120   | 600×480×1250                | 80mm              | 30kV 50/60Hz | 240mm               |
| SM-30ST180   | 800×600×1350                | 150mm             | 30kV 50/60Hz | 240mm               |
| SM-50ST120   | 800×650×1350                | 80mm              | 50kV 50/60Hz | 220mm               |
| SM-50ST180   | 800×650×1350                | 150mm             | 50kV 50/60Hz | 220mm               |
| SM-50STR300  | 800×800×600                 | 150mm             | 50kV 50/60Hz | 300mm               |
| SM-15ST30-MP | 600×480×1250                | 40mm              | 15kV 50/60Hz | 200mm               |

— M: Memory counter option.

— P: Data printer option

# Cable In-line Tester

## Laser Micrometer



LDM-110



STANDARD



DUAL AXES



SWING TYPE

### Product Feature

- With use of the long life semiconductor laser, the machine can be used more than 100,000 hours.
- It uses high precision F lens with high linearity. It can measure vibrating matters.
- No affect from ambient light.
- Measuring opaque/transparent objects is possible.
- Maintenance is easy / Calibration has simple structure

| TYPE       | MODEL                   | RANGE      | ACCURACY            | RESOLUTION        |
|------------|-------------------------|------------|---------------------|-------------------|
| STANDARD   | LDM-301H                | 0.02 – 1mm | $\pm 1\mu\text{m}$  | 0.1 $\mu\text{m}$ |
|            | LDM-302H                | 0.05 – 5mm | $\pm 1\mu\text{m}$  | 0.1 $\mu\text{m}$ |
|            | LDM-303H                | 0.3 – 30mm | $\pm 2\mu\text{m}$  | 0.1 $\mu\text{m}$ |
|            | LDM-304H                | 0.5 – 90mm | $\pm 5\mu\text{m}$  | 1 $\mu\text{m}$   |
|            | LDM-305H                | 1 – 180mm  | $\pm 10\mu\text{m}$ | 1 $\mu\text{m}$   |
|            | LDM-305H                | 2 – 300mm  | $\pm 30\mu\text{m}$ | 1 $\mu\text{m}$   |
| SEPARATE   | LDM-303H-SP             | 0.3 – 30mm | $\pm 2\mu\text{m}$  | 0.1 $\mu\text{m}$ |
|            | LDM-304H-SP             | 0.5 – 90mm | $\pm 5\mu\text{m}$  | 1 $\mu\text{m}$   |
|            | LDM-305H-SP             | 1 – 180mm  | $\pm 10\mu\text{m}$ | 1 $\mu\text{m}$   |
|            | LDM-306H-SP             | 2 – 300mm  | $\pm 30\mu\text{m}$ | 1 $\mu\text{m}$   |
| DUAL AXES  | LDM-302H-XY             | 0.05 – 5mm | $\pm 1\mu\text{m}$  | 0.1 $\mu\text{m}$ |
|            | LDM-303H-XY             | 0.3 – 30mm | $\pm 2\mu\text{m}$  | 1 $\mu\text{m}$   |
|            | LDM-304H-XY             | 0.5 – 90mm | $\pm 5\mu\text{m}$  | 1 $\mu\text{m}$   |
|            | LDM-305H-XY             | 1 – 180mm  | $\pm 10\mu\text{m}$ | 1 $\mu\text{m}$   |
|            | LDM-306H-XY             | 2 – 300mm  | $\pm 30\mu\text{m}$ | 1 $\mu\text{m}$   |
| SWING TYPE | LDM-303H-SP<br>LDM-703A | 0.3 – 30mm | $\pm 2\mu\text{m}$  | 0.1 $\mu\text{m}$ |
|            | LDM-304H<br>LDM-704A    | 0.5 – 90mm | $\pm 5\mu\text{m}$  | 1 $\mu\text{m}$   |
|            | LDM-305H<br>LDM-705     | 1 – 180mm  | $\pm 10\mu\text{m}$ | 1 $\mu\text{m}$   |

## CV Hot Diameter

CV Hot Diameter



SM-DM60,90,120

| Application        | Specification                        |
|--------------------|--------------------------------------|
| Masuring Method    | Non contact HR-Light Scanning Method |
| Heater             | Heater(HR-Radiator)                  |
| Masuring Range     | 0.10~50.00mm(Max)                    |
| Accuracy           | $\pm 0.05\text{mm}$                  |
| Scanning Direction | Single axis Type                     |
| Heater cap.        | 200W×6EA(1.2kw)                      |
| IR Current         | 50~130A(Max)                         |
| Input Power        | 220V $\pm 10\%$ 50/60Hz 1Ph          |

## Lump neck Down Detector



TM-1003W

### | Product Feature |

- This machine detects the changes of shadow shaded by measured object
- It can detect all kind of external diameter in production line.(Vinyl cable, communication cable, electronic cable, plastics, rubber, glass, bar, pipes etc.)
- Non contact ; High speed, continuous detecting is possible and easy to handle.



TM-3002W



TM-3004WA

| Composition           | Fine wire/Cable                                                         |            |            | Middle dia.wire/cable |            |            |             |             |
|-----------------------|-------------------------------------------------------------------------|------------|------------|-----------------------|------------|------------|-------------|-------------|
| Model                 | TM-1100XY                                                               | TM-1003W   | TM-1104W   | TM-3001W              | TM-3002W   | TM-3004W   | TM-3008W    | TM-3016W    |
| Detecting direction   | 2                                                                       | 3          | 4          | 1                     | 2          | 4          | 8           | 16          |
| Measuring range       | Ø0.02 ~5 mm                                                             |            |            | Ø0.1 ~35 mm           |            |            |             |             |
| Detecting sensitivity | 0.01 ~1 mm                                                              |            |            | 0.05 ~10 mm           |            |            |             |             |
| Detecting accuracy    | ±1% of max. set value                                                   |            |            |                       |            |            |             |             |
| Slit length           | 18mm                                                                    | 12mm       | 18mm       | 48mm                  |            |            |             |             |
| Slit width            | 0.5mm                                                                   |            |            | 1mm                   |            |            |             |             |
| Line speed            | 1 m/min ~ 1500m/min                                                     |            |            |                       |            |            |             |             |
| Alarm output          | 凹,凸 Red LED turns on, Relay contact output. (AC 250V 2A Resistanceload) |            |            |                       |            |            |             |             |
| Alarm time            | 0.5sec                                                                  | 0.05sec    | 0.5sec     |                       |            |            |             |             |
| Power supply          | AC 220V 50 / 60Hz                                                       |            |            |                       |            |            |             |             |
| Outside dimension     | 260×265×60                                                              | 150×140×40 | 350×280×55 | 260×90×41             | 260×260×60 | 370×335×60 | 370×335×120 | 370×335×240 |
| Weight                | 2.5Kg                                                                   | 1Kg        | 5Kg        | 1.5Kg                 | 3Kg        | 6Kg        | 12Kg        | 24Kg        |



TM-4002

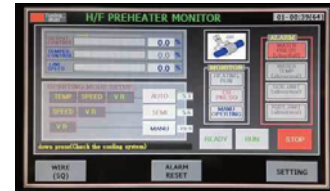


TM-6004

| Composition           | Largedia.wire/cable/pipe                                                                       |             |             |             |             | Extra.Large dia.wire/cable/pipe |             |              |             |
|-----------------------|------------------------------------------------------------------------------------------------|-------------|-------------|-------------|-------------|---------------------------------|-------------|--------------|-------------|
| Model                 | TM-4001                                                                                        | TM-4002     | TM-4004     | TM-4008     | TM-4016     | TM-6004                         | TM-6008     | TM-7003      | TM-7009     |
| Detecting direction   | 1                                                                                              | 2           | 4           | 8           | 16          | 4                               | 8           | 3            | 9           |
| Measuring range       | Ø0.1 ~60 mm                                                                                    |             |             |             |             | Ø1 ~80 mm                       |             | Ø1 ~130 mm   |             |
| Detecting sensitivity | 0.15 ~10 mm                                                                                    |             |             |             |             | 0.2 ~10 mm                      |             |              |             |
| Detecting accuracy    | ±2% of max. set value                                                                          |             |             |             |             |                                 |             |              |             |
| Slit length           | 70mm                                                                                           |             |             |             |             | 90mm                            |             | 140mm        |             |
| Slit width            | 1.5 mm                                                                                         |             |             |             |             | 2mm                             |             |              |             |
| Line speed            | 1 m/min ~ 1000m/min                                                                            |             |             |             |             | 0.3 m/min ~500 m/min            |             |              |             |
| Alarm output          | Yellow or Red LED turns on,(□:Yellow, △:Red) Relay contact output, (AC 250V 2A Resistanceload) |             |             |             |             |                                 |             |              |             |
| Alarm time            | 0.5sec                                                                                         |             |             |             |             |                                 |             |              |             |
| Power supply          | AC 220V 50 / 60Hz                                                                              |             |             |             |             | AC 220 V 50 / 60Hz              |             |              |             |
| Outsidedimension      | 540×160×100                                                                                    | 630×560×160 | 807×674×136 | 807×674×272 | 807×680×424 | 720×660×1153                    | 720×660×306 | 990×930×1125 | 990×930×375 |
| Weight                | 7Kg                                                                                            | 25Kg        | 38Kg        | 76Kg        | 152Kg       | 38Kg                            | 76Kg        | 40Kg         | 120Kg       |

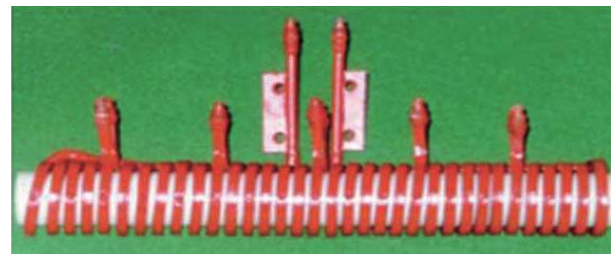
# Cable In-line Tester

## High Frequency Induction preheater



### Product Feature |

- High–frequency induction heating equipment enhances the productivity and quality of products in sheath extrusion process of steel/non steel. It is applied for induction heating and dissolution heating treatment.
- High efficiencies and durability  
This machine use IGBT high frequency induction heating method
- Equipped with Digital P.I.D. Controller, it controls temperature precisely.
- Options for outputs and a wide range of frequency
- Rapid heating and temperature distribution are uniform
- High temperature heating which can not get from combustion heating is possible.
- Short preparation time, no consumables ; easy to repair

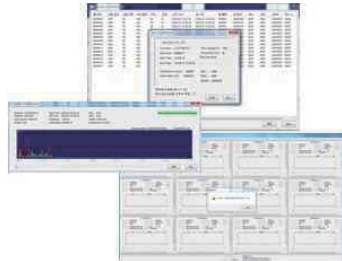


| Model          | SM-HF75                                                                                                                         | SM-HF100 | SM-HF150 | SM-HF200 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|
| Type           | IGBT control                                                                                                                    |          |          |          |
| Output control | Voltage Control by S.C.R                                                                                                        |          |          |          |
| Temp. control  | Digital P.I.D Controller                                                                                                        |          |          |          |
| Input power    | 85 KVA                                                                                                                          | 110 KVA  | 170 KVA  | 230 KVA  |
| Output power   | 75 kW                                                                                                                           | 100 kW   | 150 kW   | 200 kW   |
| Frequency      | 5~10 KHz ±10%                                                                                                                   |          |          |          |
| Component      | – Transister(I,G,B,T) Inverter(Power generator)<br>– H,F Current Transformer<br>– Water cable / Cooler<br>– High frequency coil |          |          |          |
| Input power    | AC 380V±10% 60Hz 3Ph.                                                                                                           |          |          |          |

# Enamel Wire Tester

## Enamel Pichole Detect System

### Inline continuity management system



PC Program

- Control type : Touch screen control
- Output volt./ampere : DC 350 ~ 3,000 → 8 point setting
- 5 ~ 16  $\mu$ A → auto setting
- Function/display : Time and tuning time / The total length setting and display the length of section Set Fault / Fault section graph / ENX(fault section no.) ENM(fault sector) ENMM(fault length)
- Touch screen program control makes check/ manage efficient and easy
- It is effective to manage the fault section as displaying graph
- Available sort each item like fault number, most fault sect or, length of fault
- The way of detecting is designed to accord with NEMA SPEC
- The management with PC Program is allowed to store and edit date easily and efficiently



Data Label Printer



Sheave Roller



Touch Control unit



Data Management System

# Enamel Wire Tester

## In-line Continuity Tester



SM-CT2500



ICT-20L

### | Product Feature |

- The In-line Continuity Tester tests the film insulation defect in enamel wire. It Tests several lines at once. So can prevent numerous defect which occur during P.H Inspection and enhances the reliability and quality of products. Detecting method which use DC High Voltage meets the standard of NEMA SPEC as well.
- Micom is equipped; it meets 20 Line Spec.(MW 1000 PART 3-3,8)
- When detect fault : It prints the information of defect (date, time, line number, the number of defect)
- It prints about whole Line periodically (Interval time 20, 40, 60 min)
- It displays the number of pin-whole occurrence on each lines
- It compensated the disadvantages of existing P.H test

| Application       | Specification                                              |                      |                      |
|-------------------|------------------------------------------------------------|----------------------|----------------------|
| Model             | ICT-1L                                                     | ICT-20L              | CT-2500              |
| Type              | IN LINE SHEAVE ROLLER Contact type                         |                      |                      |
| Diameter of cable | 0.02~5mm                                                   |                      | 0.02~1.6mm           |
| Test line         | 1Line                                                      | 20Line               | 1Line                |
| Output voltage    | 500~2500VDC                                                |                      |                      |
| Display           | NG counter, set point of fault, alarm device, test voltage |                      |                      |
| Interface         | Alarm                                                      | Data printer & alarm | Alarm                |
| Dimension         | 380(W)×105(H)×300(D)                                       | 515(W)×385(H)×490(D) | 515(W)×385(H)×490(D) |
| Power supply      | 220VAC ± 5% 50/60Hz 1Phase.                                |                      |                      |

## Enamel Lump Detect System

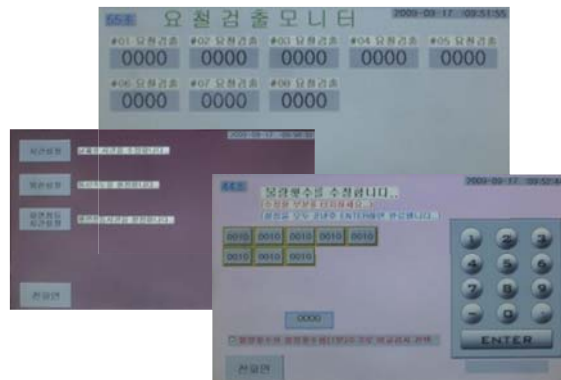
### Inline Surface management System



LD-053C



LD-302C



Touch control program



Installation

- Detect type : Non-contact type double / triple axes
- Apply diameter :  $\varnothing 0.02 \sim 3\text{mm}$
- Detect range :  $0.01 \sim 9.99\text{mm}$
- Alarm time :  $0.05\text{sec}$
- Touch screen
- Printing fault count / date / time for each line
- Display the graph for each line
- Alarm unit
- Available external storage memory

# Enamel Wire Tester

## Break Down Voltage Tester



SM-20BDV

### | Product Feature |

- This machine checks insulation breakdown voltage to test insulation capacity of coating.
- No need to remove the insulation film when measuring. (Blue dip cage is installed)
- Lamp is on, when machine operates or finds fault.
- Reset S/W ; it reset function, after sensing faulty
- Auto startup S/W
- Stopping the rise of voltage S/W
- Safety device : When the test cage cover is opened, the equipment won't start even the user presses the start S/W button.
- Calibration : State-authorized test certificate

| Application                 | Specification                                                                |
|-----------------------------|------------------------------------------------------------------------------|
| Model                       | SM-20BDV                                                                     |
| Test diameter               | 0.05 ~ 3.75mm                                                                |
| Out put                     | 0 ~ 20000 V / 500 VA                                                         |
| Leakage current             | 20mA (canset each 1 mA)<br>Digital display : 0.1mA unit leakage current      |
| Test voltage increase speed | 500V /sec                                                                    |
| Voltage meter               | Digital Voltage meter                                                        |
| Measurement accuracy        | ± 0.5%                                                                       |
| Size                        | –Out case : 530(W)×360(D)×490 (H) mm<br>–Test cage : 120(W)×180(D)×100(H) mm |

## Abrasion Tester



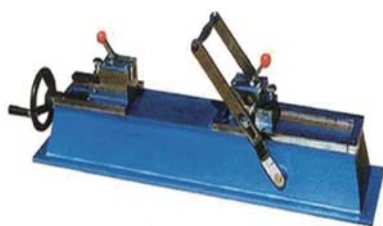
SM-KA01

### | Product Feature |

- This tester measure the breaking load of conductor samples. Put the abrasion head on the surface of samples, put the load to increase weight, and move it. Sheath of conductor is peeled off by the weight, and abrasion head stops when sheath breaks, so user can know breaking load.
- It complies with KS C 3006, JIS C 3003, NEMA, IEC Industrial Standard.
- Compact size

| Application               | Specification                                 |
|---------------------------|-----------------------------------------------|
| Model                     | SM-KA01                                       |
| TYPE                      | One Direction                                 |
| Speed                     | 400mm/min                                     |
| Weight                    | 100g x 1EA, 200g x 1EA, 400g x 1EA, 800 X 1EA |
| Test piece rotation angle | 0°, (360°), 120° , 240°                       |
| Power                     | AC 220V / 1ø / 60Hz                           |
| Size                      | 500(W)×330(D)×400(H) ( mm)                    |

## Tightness of Insulation Tester



SM-TI01

### | Product Feature |

- This machine is designed to check there is cracking of coating which conductor of cable is shown. Set bench marks 250mm at enamel copper and enamel aluminum wire which has less than  $\varnothing 1.6\text{mm}$  diameter of conductor.
- Then approx. Extend it with tension speed 4mm/sec, and magnify it 14 times to observe cracking.

| Application    | Specification                        |
|----------------|--------------------------------------|
| Model          | SM-TI01                              |
| Driving        | Lever type / Air cylinder type       |
| Sample length  | 350mm                                |
| Test pieces    | $\varnothing 1.6\text{mm}$ less than |
| Chuck distance | 250mm                                |
| Test speed     | 4mm/sec                              |
| Clamp          | V type, Round type                   |
| Size           | 800×230×300 (mm)                     |
| Weight         | 55Kg                                 |
| Standard       | KS C 3006, JIS C 3003                |

## Twisting Endurance Tester



SM-216 Series

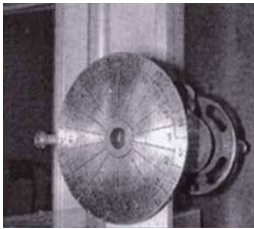
### | Product Feature |

- This tester is designed to test twisting endurance of various material of wires.
- For thin wires like piano wire, and steel wire, it is used to count the number of twisting rather than the stress.

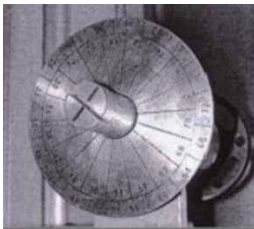
| Model            | SM-216-10                               | SM-216-20                       | SM-216-30                       |
|------------------|-----------------------------------------|---------------------------------|---------------------------------|
| Application wire | PVC, PE, TEFLON insulation              |                                 |                                 |
| Driving type     | Motor driving                           |                                 |                                 |
| Type             | Fixed Stand type                        |                                 |                                 |
| Clamp length     | 0~500mm                                 |                                 | 0~1000mm                        |
| Bending moment   | 10 kg · m                               | 20 kg · m                       | 30 kg · m                       |
| Ping a range     | $\varnothing 0\sim 10\text{mm}$         | $\varnothing 5\sim 25\text{mm}$ | $\varnothing 5\sim 60\text{mm}$ |
| Test Angle       | $\pm 360$                               |                                 |                                 |
| Test times       | Digital Counter (Possible 9999 setting) |                                 |                                 |
| Power            | 220VAC/50/60Hz 500W                     | 220VAC/50/60Hz 900W             | 220VAC/50/60Hz 2KW              |

# Enamel Wire Tester

## Spring Back Tester SBT-72 IECM



Before Assemble Mandrel



After Assemble Mandrel

### | Product Feature |

Spring Back tester is for testing the elasticity of enamel wire.

### | Way of use |

1. Prepare two specimen approx. 1m long. Each value fix and hang mandrel and the weight, then wind the wire at 5–10mpm.
2. When press the end of black coil and release the other end, rebound value reorganize on the scale
3. Install the pivot 1.4m height.
4. Fix the fixture and graduation at 0. Adjust the mandrel to place '0' at the topmost place.
5. Put one end of specimen on the fixture of mandrel, and hang a regulated weight on the other end.

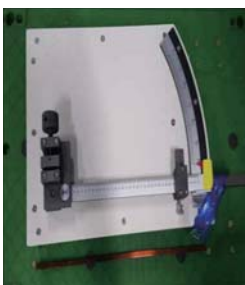
6. Rotate the mandrel to clockwise and mark with ink.
7. Mark where gradation '0' is pointing at last with ink.
8. Use your left hand to press the wire winded with mandrel and detach the weight.
9. Cut the end of marked wire (the side which hang the weight) about 20 mm length and bend it.
10. Hang the bended wire on a pencil and untie it slowly. ( If the wire is untied abruptly, start the test from the beginning)
11. Untie the wire slowly and mark the gradation where it stops.

| Application   | Specification                                                           |
|---------------|-------------------------------------------------------------------------|
| Model         | SBT -72 IECM                                                            |
| Mandril       | ∅5mm, ∅7mm, ∅10mm, ∅12.5mm, ∅18mm, ∅25mm, ∅37.5mm, ∅50mm                |
| Driving motor | Poles(P) : 4 Poles / Rotation power(W) : 6W / Rotation torque(Nm):0.040 |
| Environment   | Power :200~ 230V 60Hz / Temp : 0~50℃ / Humidity : below 90%             |
| Angle board   | 75°, 36°                                                                |
| Test weight   | 25.6g, 51.1g, 102.2g, 204.4g, 408.8g, 817.6g, 1226.4g, 1533g            |
| Size          | 290(W)×210(H)×260(D)mm                                                  |

## Spring Back Tester



SBT-120N



### | Product Feature |

It is designed to test the elasticity of enamel wires of which diameter is between 0.25mm~1.6mm.

| Application                   | Specification                                                                                           |
|-------------------------------|---------------------------------------------------------------------------------------------------------|
| Model                         | SM-120N                                                                                                 |
| Angle index plate and mandril | ∅19mm : 120°/55 divided gradation, ∅48mm : 120°/55 divided gradation, ∅82mm : 120°/55 divided gradation |
| Motor feature                 | Poles(P) : 4Poles / Rated output : 6W<br>Rated torque(N.m) : 0.040 / Rated rotation speed (rpm)         |
| Service environment           | Power : Single 200~230V 60Hz / Temp : 0~50℃<br>Humidity : Below 90%                                     |
| Test weight                   | 57g, 115g, 455g                                                                                         |
| Exterior                      | 290(W) × 210(H) × 260(D)mm                                                                              |

## Wire Twisting Machine



SM-TC01



### | Product Feature |

- This equipment is for twisting certain length of wires in accordance with International standard before testing the breakdown of enamel wire insulation
- Users can check the number of twisting with installing the counter. Steel ruler for measuring the length is possible.
- Firmly integrated

### | cables twist method |

| Diameter(mm) | Tensile Strength<br>N(kgf) | Length<br>(Twisted number for about 2cm) |
|--------------|----------------------------|------------------------------------------|
| 0.05         | 0.0294(0.003)              | 50                                       |
| 0.06~0.07    | 0.0490(0.005)              | 40                                       |
| 0.08~0.11    | 0.098(0.01)                | 30                                       |
| 0.12~0.17    | 0.392(0.04)                | 24                                       |
| 0.18~0.29    | 1.18(0.12)                 | 20                                       |
| 0.30~0.45    | 3.43(0.35)                 | 16                                       |
| 0.50~0.70    | 4.1(0.35)                  | 12                                       |
| 0.75~1.2     | 14.7(1.5)                  | 9                                        |
| 1.3~2.0      | 39.2(4)                    | 6                                        |
| 2.1~3.2      | 68.6(7)                    | 3                                        |

## Twisting Endurance Tester



SM-300



### | Product Feature |

- This tester is designed to test oil modification of enamel wire. It complies KSC C3006 21 (1)–spring elongation.
- Wrapping part and spring elongation part of this machine is integrated in mandrel

| Application                     | Specification                                                                                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model                           | SM-300                                                                                                                                                                                                     |
| Speed control                   | Inverter control                                                                                                                                                                                           |
| Wrapping speed                  | 10~150 rpm (Changeable)                                                                                                                                                                                    |
| Spring Elongation part          | <ul style="list-style-type: none"> <li>– Moving speed : 10~100mm/sec changeable</li> <li>– Wire fix hook, recover timer, scale</li> <li>– Top/ bottom limit switch, moving distance 600mm max.)</li> </ul> |
| Mandrel fix part                | Manual fix chuck                                                                                                                                                                                           |
| Wrapping method select function | Auto / manual select                                                                                                                                                                                       |
| Manual switch                   | Foot switch : on/off                                                                                                                                                                                       |
| Size                            | 750(W)×1800(H)×650(D)mm                                                                                                                                                                                    |
| Power                           | AC220V 50/60Hz 1 Phase                                                                                                                                                                                     |

# Conductor Resistance Tester

## Digital Wire Resistance Tester



SM-5894

### | Product Feature |

- SM-5894 measures conductor resistance of wires like enamel wires, communication cables, vinyl cable, automobile cable.
- Temperature compensation function
- Easy control
- Accurate measuring with clamps device

| Application              | Specification                               |
|--------------------------|---------------------------------------------|
| Model                    | SM-5894                                     |
| Measurement range        | 0.1uΩ ~ 100kΩ                               |
| Range                    | 0.1uΩ ~ 100kΩ Auto Range                    |
| Temperature compensation | Auto compensation                           |
| Degree of precision      | 0.03% of reading ± 2digits                  |
| Display                  | 4 1/2 Digits (1.9999 Full Scale)            |
| Dimension                | 240 × 280 × 80 mm                           |
| Interface                | RS-232, PRINTER, PLC                        |
| Input power              | 220V AC 50/60Hz 1ph.                        |
| Clamp Device             | Distance Between Voltage terminals (Option) |

## Super mega ohmmeter

### | SM-8000 <SUPER MEGOHMMETER/OHM-METER SERIES> |



SM-8215, SM-8220



SM-8216

| Application                             |       | Specification                                                                                                         |                                             |                                             |
|-----------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------|
| Model                                   |       | SM-8215                                                                                                               | SM-8220                                     | SM-8216                                     |
| Measurement voltage & measurement range | 5V    |                                                                                                                       |                                             |                                             |
|                                         | 10V   |                                                                                                                       | 5×10 <sup>4</sup> ~ 2×10 <sup>14</sup> Ω    | 5×10 <sup>4</sup> ~ 2×10 <sup>11</sup> Ω    |
|                                         | 15V   |                                                                                                                       |                                             |                                             |
|                                         | 25V   |                                                                                                                       | 1.25×10 <sup>5</sup> ~ 5×10 <sup>14</sup> Ω | 1.25×10 <sup>5</sup> ~ 5×10 <sup>11</sup> Ω |
|                                         | 50V   | 2.5×10 <sup>5</sup> ~ 1×10 <sup>12</sup> Ω                                                                            | 2.5×10 <sup>5</sup> ~ 1×10 <sup>15</sup> Ω  | 2.5×10 <sup>5</sup> ~ 1×10 <sup>12</sup> Ω  |
|                                         | 100V  | 5×10 <sup>5</sup> ~ 2×10 <sup>12</sup> Ω                                                                              | 5×10 <sup>5</sup> ~ 2×10 <sup>15</sup> Ω    | 5×10 <sup>5</sup> ~ 2×10 <sup>12</sup> Ω    |
|                                         | 250V  | 1.25×10 <sup>6</sup> ~ 5×10 <sup>12</sup> Ω                                                                           | 1.25×10 <sup>6</sup> ~ 5×10 <sup>15</sup> Ω | 1.25×10 <sup>6</sup> ~ 5×10 <sup>12</sup> Ω |
|                                         | 500V  | 2.5×10 <sup>6</sup> ~ 1×10 <sup>13</sup> Ω                                                                            | 2.5×10 <sup>6</sup> ~ 1×10 <sup>13</sup> Ω  | 2.5×10 <sup>6</sup> ~ 1×10 <sup>13</sup> Ω  |
|                                         | 1000V | 5×10 <sup>6</sup> ~ 2×10 <sup>13</sup> Ω                                                                              | 5×10 <sup>6</sup> ~ 2×10 <sup>16</sup> Ω    | 5×10 <sup>6</sup> ~ 2×10 <sup>13</sup> Ω    |
| Accuracy of measurement voltage         |       | ±3% of Measured value                                                                                                 |                                             |                                             |
| Accuracy of measurement                 |       | ±10%(10times range of minimum value for each range at 20°C)<br>Except for the 108 range of the SM-8220, Which is ±20% |                                             |                                             |
| Output voltage                          |       | Max. 2mA                                                                                                              |                                             |                                             |
| Display                                 |       | LCD(Digital numeric & virtual analog display)                                                                         |                                             | Analog meter                                |
| Communication                           |       | RS-232C communication                                                                                                 |                                             |                                             |
| Standard function                       |       | Timer(1 to 999s), comparator, Remote start                                                                            |                                             |                                             |
| Usable temperature                      |       | 0 ~ 40°C                                                                                                              | 5 ~ 35°C                                    | 0 ~ 40°C                                    |
| Dimension                               |       | 284(W)×139(H)×251(D)mm                                                                                                |                                             |                                             |
| Weight                                  |       | 4.3Kg                                                                                                                 |                                             |                                             |
| Input Power                             |       | AC100 or 220V 50/60Hz 1Phase                                                                                          |                                             |                                             |

## Digital Wire Resistance Tester

### Product Feature |

- This is portable digital wire resistance tester.
- Handy and easy to measure; suitable to use at field.
- Good to preserve data : Measured values are saved and printed by built-in printer.
- No need to operate number to calculate : Temperature compensation and unit conversion(km/  $\Omega$ ) is equipped.
- Stable accuracy, reproducibility, and use of temperature sensor:  
It can measure resistance values which compensate temperature to 20°C
- Measuring 1km/  $\Omega$  with test pieces control in put, chargeable battery is equipped(portable)
- Easy manage with rotary button



Jounior2

| Application         | Specification                  |
|---------------------|--------------------------------|
| Model               | Jounior 2                      |
| Degree of precision | 0.1%                           |
| Test current        | 1mA ~ 10A DC                   |
| Display             | LCD & backlight                |
| Interface           | RS232                          |
| Memory              | Save 2,000 EA data             |
| Usual temperature   | -10°C to 60°C                  |
| Chargeable battery  | Lithium-ion 14.8V/6A           |
| Input power         | 100~200V AC 50/60Hz auto power |
| Dimension           | 410(L)×337(W)×178(H) mm        |
| Weight              | 5.9kg                          |

## Digital Wire Resistance Tester

### Product Feature |

- This digital wire resistance tester is designed to measure conductor resistance of all kinds of wires accurately.
- No need to calculate; Temperature compensation and unit conversion(Km/  $\Omega$ ) is equipped.
- Printer and program(conductivity) can be added.
- It can measure values which compensate temperature to 20°C with use of temperature sensor
- Stable accuracy, reproducibility,
- 1 Km translation calculation resistor measurement by the test pieces control
- Output voltage : 0.01~50A DC, User-select
- Reliable conductor test ; above 500sq, output at max. 50A
- Mini printer (Optional)
- Conductivity measuring program(Optional)



SY3007

| Application         | Specification                  |
|---------------------|--------------------------------|
| Model               | SY3007                         |
| Measurement range   | 0.1u $\Omega$ ~100k $\Omega$   |
| Degree of precision | 0.1%                           |
| Input power         | 100~200V AC 50/60Hz auto power |
| Output power        | 0~50V DC                       |
| Test current        | 0.01~50A DC (User can choose)  |
| Display             | Color LCD touchscreen          |
| Interface           | RS232/2USB                     |
| Memory              | Save 10,000 EA data            |
| Usual temperature   | -10°C to 60°C                  |
| Dimension           | 525(L)×500(W)×280(H)           |
| Weight              | 24.6kg                         |

# Conductor Resistance Tester

## Resistance Measuring Tester



RM 3544

### | Product Feature |

- Basic accuracy 0.02%, Minimum resolution 1uΩ, Maximum measurement current 300mA
- Measurement rang 0.000mΩ (measurement current 300mA) ~ 3.5MΩ
- 4 terminal method; ignore the affect of measuring lead

| Application                                 | Specification                                                                                       |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Model                                       | RM-3544                                                                                             |
| Measurement rang                            | 30mΩ (Max display 35,000mΩ, resolution:1uΩ) ~ 3MΩ (Max display 3,5000MΩ, resolution: 100Ω) 9 change |
| Basic accuracy                              | ±0.020% rdg. ±0.007% f.s.                                                                           |
| Measurement current                         | DC 30mA(at 30mΩ range)~ DC500 nA(at 3MΩ range)                                                      |
| Open terminal voltage                       | DC 5.5V Max.                                                                                        |
| Temperature measurement                     | -10.0℃ ~ 99.9℃, Basic accuracy : ±0.5℃                                                              |
| Measurement speed                           | FAST(50Hz:21ms, 60Hz:18ms), MED(101ms), SLOW(401ms)                                                 |
| Communication interface<br>(only RM3544-01) | only one choice out of RS 232C/Printer(RS-232C)/USB                                                 |
| Input Power                                 | AC 100 ~ 240V, 50/60Hz, 15VA                                                                        |
| Weight                                      | 0.9kg                                                                                               |
| Dimension                                   | 215(W)X 80(H) X166(D)mm                                                                             |

MEMO

## Electric Scale



SM-SD-200L



SM-MD-300SG



Printer AD-8121B



RS-232C for SD-200L



Liquid Density Kit



Airtight

### | Product Feature |

- EW-300SG : Quick measurement (10sec.)  
Simple operation  
Calibration is conducted automatically by key movement.
- MD-300C : Liquid density is measurable(Option), the volume of solid samples are measurable as well. Also, measuring time can be selected from 20,40,60 sec.
- SD-200L : It can measure high precision degree value(0.0001), and check error after measurement. Liquid density is measurable(Option) , and the machine calibrate automatically

| MODEL              | MD-300SG                | MD-300S                  | SD-200L                   |
|--------------------|-------------------------|--------------------------|---------------------------|
| Resolution         | 0.01g/cm <sup>3</sup>   | 0.001g/cm <sup>3</sup>   | 0.0001g/cm <sup>3</sup>   |
| Range of weight    | 0.01~300g               | 0.01~300g                | 0.0001~200g               |
| Range of Density   | 0.01g/cm <sup>3</sup> ~ | 0.001g/cm <sup>3</sup> ~ | 0.0001g/cm <sup>3</sup> ~ |
| Time of measure    | 10sec                   | 20/40/60sec              | selectable                |
| Products Size(mm)  | 218W × 190D × 170H      | 218W × 190D × 170H       | 319W × 213D × 301H        |
| Products Weight    | 1.54kg                  | 1.54kg                   | 5.8kg                     |
| Printer            | O                       | O                        | O                         |
| Liquid density kit | X                       | O                        | O                         |
| Power Supply       | AC 115 ~ 240V 50/60Hz   |                          |                           |

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# Measuring Instrument

## Zoom Stereo Micrometer

### JSZ SERIES



JSZ-7XT Model

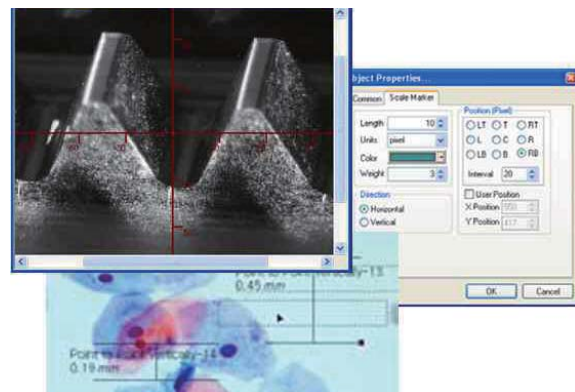
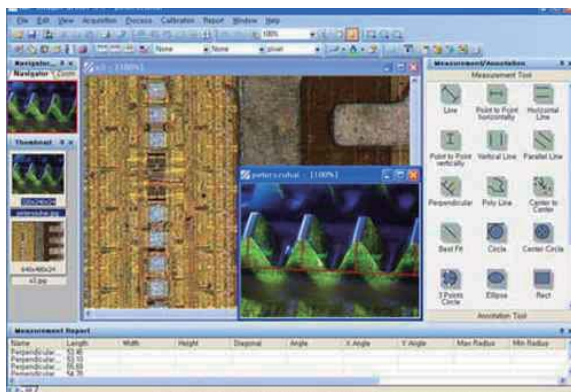


JSZ-7XB Model

### Product Feature |

- Easy operating and maintenance
- Self calibration through PC program
- Provide measuring and editing function by filming the image of sample.
- Provide Data application and convenience function

| Model               | JSZ-7XT                                                                                                    | JSZ-7XB         |
|---------------------|------------------------------------------------------------------------------------------------------------|-----------------|
| Head                | Binocular head                                                                                             | Trinocular head |
|                     | 45 ° inclined, Interpupillary distance adjustable 52–75 mm                                                 |                 |
| Total Magnification | 8X – 200X depending on eyepiece and objective                                                              |                 |
| Eyepiece            | WF 10X/22 with built-in diopter adjuster<br>WF 20X/12,5 with built-in diopter adjuster                     |                 |
| Zoom lens           | 0,8X – 5X                                                                                                  |                 |
| Zoom ratio          | 6,3 : 1                                                                                                    |                 |
| Auxiliary objective | 2X                                                                                                         |                 |
| Working distance    | With zoom lens – 115mm                                                                                     |                 |
|                     | With 2X auxillary objective – 43,5mm                                                                       |                 |
| Field of view       | 27,5 mm – 1,3 mm                                                                                           |                 |
| Illuminator         | Reflected: Built in ring LED Lamp(intensity controllable)<br>Transmitted: LED Lamp(intensity controllable) |                 |
| Power supply        | AC 220V 50/60Hz.                                                                                           |                 |



## Profile Projector



PJ-A3010F-100

### | Product Feature |

- Digital XY counter which is easy to read is placed near projective screen to minimize movement of vision.
- Digital reader protractor screen : easy to measure angles

| Model            | PJ-A3010F-100                                                                                                                                                                                                                                                                                                                  |                     |             |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------|
| XY range         | 100 × 100mm                                                                                                                                                                                                                                                                                                                    | Valid area of Table | 142 × 142mm |
| Measuring unit   | Embedded linear scale                                                                                                                                                                                                                                                                                                          | Resolution          | 0.001mm     |
| Angle screen     | <ul style="list-style-type: none"> <li>– Range : 315mm</li> <li>– Digital angle display : <math>\pm 370^\circ</math></li> <li>– Angle index : <math>0.01^\circ</math> or <math>1^\circ</math> (changeable)</li> <li>– Function : reorientation, SPC printable, Zero point setting(PJ-A3010F-200E, 100E, A3005F-150)</li> </ul> |                     |             |
| Projection lenz  | 10 × Lenz set (172-202)                                                                                                                                                                                                                                                                                                        |                     |             |
| Magnification    | Outline lighting : $\pm 0.1\%$ or below / Surface lighting : $\pm 0.15\%$ or below                                                                                                                                                                                                                                             |                     |             |
| Outline lighting | <ul style="list-style-type: none"> <li>– Light source : Halogen bulb(24V, 150W)</li> <li>– Optical system : Telecentric system</li> <li>– Function : 2 step brightness control, heat adsorption filter</li> </ul>                                                                                                              |                     |             |
| Surface lighting | <ul style="list-style-type: none"> <li>– Light source : Halogen bulb(24V, 150W)</li> <li>– Optical system : vertical lighting with half-reflection mirror</li> </ul>                                                                                                                                                           |                     |             |
| Power supply     | 100/110/120/220/240V AC(changeable), 50/60Hz                                                                                                                                                                                                                                                                                   |                     |             |
| Weight           | 112kg                                                                                                                                                                                                                                                                                                                          |                     |             |

## Profile Projector



EP-1510

### | Product Feature |

- It can examine complex elements by projecting two kinds of lights (surface, penetration) on them. It is usually used for investigating various machine, electronics, parts, and equipment and part for semiconductors.
- Halogen lamp light system guarantee higher accuracy.
- This equipment has various option, and can be customized.
- Multi-function counter and mini-printer are installed.
- Front door design of work table: easy to maintenance

| Model                         | EP-1510                                                                                                        |
|-------------------------------|----------------------------------------------------------------------------------------------------------------|
| Projecting status             | Erected image                                                                                                  |
| Range of rotation             | $0 \sim 360^\circ$                                                                                             |
| Size of stage                 | 300mm X 170mm                                                                                                  |
| Center distance               | X axis : 152mm, Y axis : 50mm, Z axis : 90mm                                                                   |
| Magnification                 | 10 × lenz                                                                                                      |
| X axis, Y axis degree         | $(3+ L/25)\mu m$                                                                                               |
| Multi function data processor | Point, line, circle, distance (calibration and intersection angle)<br>Call facility of Max. distance measuring |
| Resolution                    | 0.001 mm                                                                                                       |
| Input power                   | 100 to 240VAC $\pm 10\%$ 50/60Hz                                                                               |

# Measuring Instrument

## Digital Thermometer



SM-YT-305

### | Product Feature |

- Large display is adopted.
- Upgraded function: Standing function to the body, display min/max gauge and hold function.
- Usage : Measuring temperature of refrigerator, cold storage, manufacturing process, quality management, food industry, analysis process, coordination field, and environmental field.

| Model                             | YT-305                          |
|-----------------------------------|---------------------------------|
| Range of temperature              | K Type : -50~1300℃ / -50~1999°F |
| Degree of precision               | ±0.3% +2℃, ±0.5% +4°F           |
| Workable temperature of equipment | 0℃ ~50℃(<80%R.H)                |
| Storage temperature of equipment  | -40℃ ~ 60℃(<80%R.H)             |
| Size                              | 155 × 72 × 35mm                 |
| Weight                            | 175g                            |

## Digimatic Dial Gauge



2046S

### | Product Feature |

- Dial gauge with standard 0.01mm gradation has a 57mm diameter external frame.
- Limit pin and diameter external frame clamp are provided for all types.
- External clamp and lifting lever(option) can be attached to either right or left without use of other tools.
- Diameter frame and bezel are assembled integral by putting O-ring. Water or oil won't enter.
- Stem and spins are made of stainless steel.
- Carbide measurement is used.

| Graduation | Order No |           | Rang<br>(range/rev) | Accuracy | Dial<br>reading | Measuring<br>force |
|------------|----------|-----------|---------------------|----------|-----------------|--------------------|
|            | w/lug    | Flat-back |                     |          |                 |                    |
| 0.01mm     | 2044S    | 2044SB    | 5mm(1mm)            | ±12um    | 0-100           | 1.4N orles         |
| 0.01mm     | 2044S-09 | 2044SB-09 | 5mm(1mm)            | ±13um    | 0-100           | 1.4N orles         |
| 0.01mm     | 2044S-60 | 2044SB-60 | 5mm(1mm)            | ±12um    | 0-100           | 2.5N orles         |
| 0.01mm     | 2045S    | 2045SB    | 5mm(1mm)            | ±12um    | 0-50-0          | 1.4N orles         |
| 0.01mm     | 2046S    | 2046SB    | 10mm(1mm)           | ±13um    | 0-100           | 1.4N orles         |
| 0.01mm     | 2046SY   | 2046SYB   | 10mm(1mm)           | ±13um    | 0-100           | 1.4N orles         |
| 0.01mm     | 2046SH   | 2046SHB   | 10mm(1mm)           | ±8um     | 0-100           | 1.4N orles         |
| 0.01mm     | —        | 2046SLB   | 10mm(1mm)           | ±13um    | 0-100           | 1.4N orles         |
| 0.01mm     | 2046S-09 | 2046SB-09 | 10mm(1mm)           | ±15um    | 0-100           | 1.4N orles         |
| 0.01mm     | 2046S-60 | 2046SB-60 | 10mm(1mm)           | ±13um    | 0-100           | 2.5N orles         |
| 0.01mm     | 2046S-69 | 2046SB-69 | 10mm(1mm)           | ±15um    | 0-100           | 2.5N orles         |
| 0.01mm     | 2046S-15 | 2046SB-15 | 10mm(1mm)           | ±13um    | 0-100           | 0.8N orles         |
| 0.01mm     | 2310S-10 | 2310SB-10 | 10mm(1mm)           | ±15um    | 0-100           | 1.4N orles         |
| 0.01mm     | 2902S    | 2902CB    | 10mm(1mm)           | ±13um    | 100-1           | 1.4N orles         |
| 0.01mm     | 2047S    | 2047SB    | 10mm(1mm)           | ±13um    | 0-50-0          | 1.4N orles         |

## Digimatic Dial Gauge



542-681

### | Product Feature |

- Compact size
- when turn on the power, IDC displays absolute position of spins from their origins and start to measure.
- The number which is set 0 point with Origin button, don't need to set absolute position again until replace the battery.
- With the adoption of Absolute encoder, no need to worry for errors caused by over-speed in spins

#### • Metric

| Resolution | Order No |           | Rang<br>(range/rev) | Accuracy | Measuring<br>force | Remarks    |
|------------|----------|-----------|---------------------|----------|--------------------|------------|
|            | w/lug    | Flat-back |                     |          |                    |            |
| 0.001mm    | 543-690  | 543-690B  | 12.7mm              | 0.003mm  | or less            | –          |
| 0.001mm    | 543-694  | 543-694b  | 12.7mm              | 0.003mm  | or less            | Dust-proof |
| 0.01mm     | 543-681  | 543-681B  | 12.7mm              | 0.02mm   | or less            | –          |

#### • Inch / Metric

| Resolution      | Order No |           | Rang<br>(range/rev) | Accuracy | Measuring<br>force | Remarks   |
|-----------------|----------|-----------|---------------------|----------|--------------------|-----------|
|                 | w/lug    | Flat-back |                     |          |                    |           |
| 0.0005"/0.001mm | 543-691  | 543-691B  | 5"                  | 0.0012"  | or less            | –         |
| 0.0005"/0.001mm | 543-695  | 543-695B  | 5"                  | 0.0012"  | or less            | Dustproof |
| 0.0005"/0.001mm | 543-692  | 543-692B  | 5"                  | 0.0012"  | or less            | –         |
| 0.0005"/0.001mm | 543-696  | 543-696B  | 5"                  | 0.0012"  | or less            | Dustproof |
| 0.001"/0.001mm  | 543-693  | 543-693B  | 5"                  | 0.0012"  | or less            | –         |
| 0.005"/0.01mm   | 543-682  | 543-682B  | 5"                  | 0.008"   | or less            | –         |
| 0.005"/0.01mm   | 543-683  | 543-683B  | 5"                  | 0.008"   | or less            | –         |

## Digimatic Calipers



530-122



500-181



500-702

### | Product Feature |

- Affordable ; designed to offer only large LCD key function to readout easily
- ZERO/ABS Key : Comparative measuring is possible; user can set display at 0 point regardless of the position of slider. Returning to the absolute mode when this buttons are pressed.

| Code    | Measuring<br>range | Gradation | Accuracy | Weight | Remark                                         |
|---------|--------------------|-----------|----------|--------|------------------------------------------------|
| 530-101 | 0-150mm            | 0.05      | ±0.05    | 145g   | Fitted with bar for depth<br>measuring (Blade) |
| 530-108 | 0-200mm            | 0.05      | ±0.05    | 180g   | Fitted with bar for depth<br>measuring (Blade) |
| 530-122 | 0-150mm            | 0.02      | ±0.03    | 145g   | Fitted with bar for depth<br>measuring (Blade) |
| 530-124 | 0-300mm            | 0.02      | ±0.04    | 355g   | Fitted with bar for depth<br>measuring (Blade) |

| Code    | Measuring<br>range | Gradation | Accuracy | Weight | Remark                                         |
|---------|--------------------|-----------|----------|--------|------------------------------------------------|
| 500-180 | 0-100mm            | 0.01mm    | ±0.02mm  | 137g   | Fitted with load for depth<br>measuring(Ø1.9)  |
| 500-181 | 0-150mm            | 0.01mm    | ±0.02mm  | 162g   | Fitted with bar for depth<br>measuring (Blade) |
| 500-182 | 0-200mm            | 0.01mm    | ±0.02mm  | 192g   | Fitted with bar for depth<br>measuring (Blade) |
| 500-702 | 0-150mm            | 0.01mm    | ±0.02mm  | 168g   | Fitted with sum roller                         |
| 500-703 | 0-200mm            | 0.01mm    | ±0.05mm  | 1980g  | Fitted with sum roller                         |

# Measuring Instrument

## Digimatic Micro Meter



103-129



293-240

### | Product Feature |

- Large LCD readout : 0.001mm resolution
- Light weight design : User can hold with one hand
- Auto switching on/off
- Approximately  $\pm 1\mu\text{m}$  (Except above 75mm)
- 1 standard bar is provided (Except 25mm/1" model)

| Item code | Measuring range | Resolution | Accuracy           |
|-----------|-----------------|------------|--------------------|
| 293-240   | 0-25mm          | 0.001mm    | $\pm 1\mu\text{m}$ |
| 293-241   | 25-50mm         | 0.001mm    | $\pm 1\mu\text{m}$ |
| 103-129   | 0-25mm          | 0.001mm    | $\pm 2\mu\text{m}$ |
| 103-130   | 25-50mm         | 0.001mm    | $\pm 2\mu\text{m}$ |

## Table



103-129



103-129

### 〈Testing stand〉

|               |              |
|---------------|--------------|
| Type          | Iron type    |
| Butcher block | Ceramite     |
| Size          | 2000×750×800 |

### 〈Worktable〉

|               |              |
|---------------|--------------|
| Type          | Iron type    |
| Butcher block | Ceramite     |
| Size          | 2000×750×800 |

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