



H y d r a u l i c   S e r v o   M a t e r i a l   T e s t i n g   M a c h i n e

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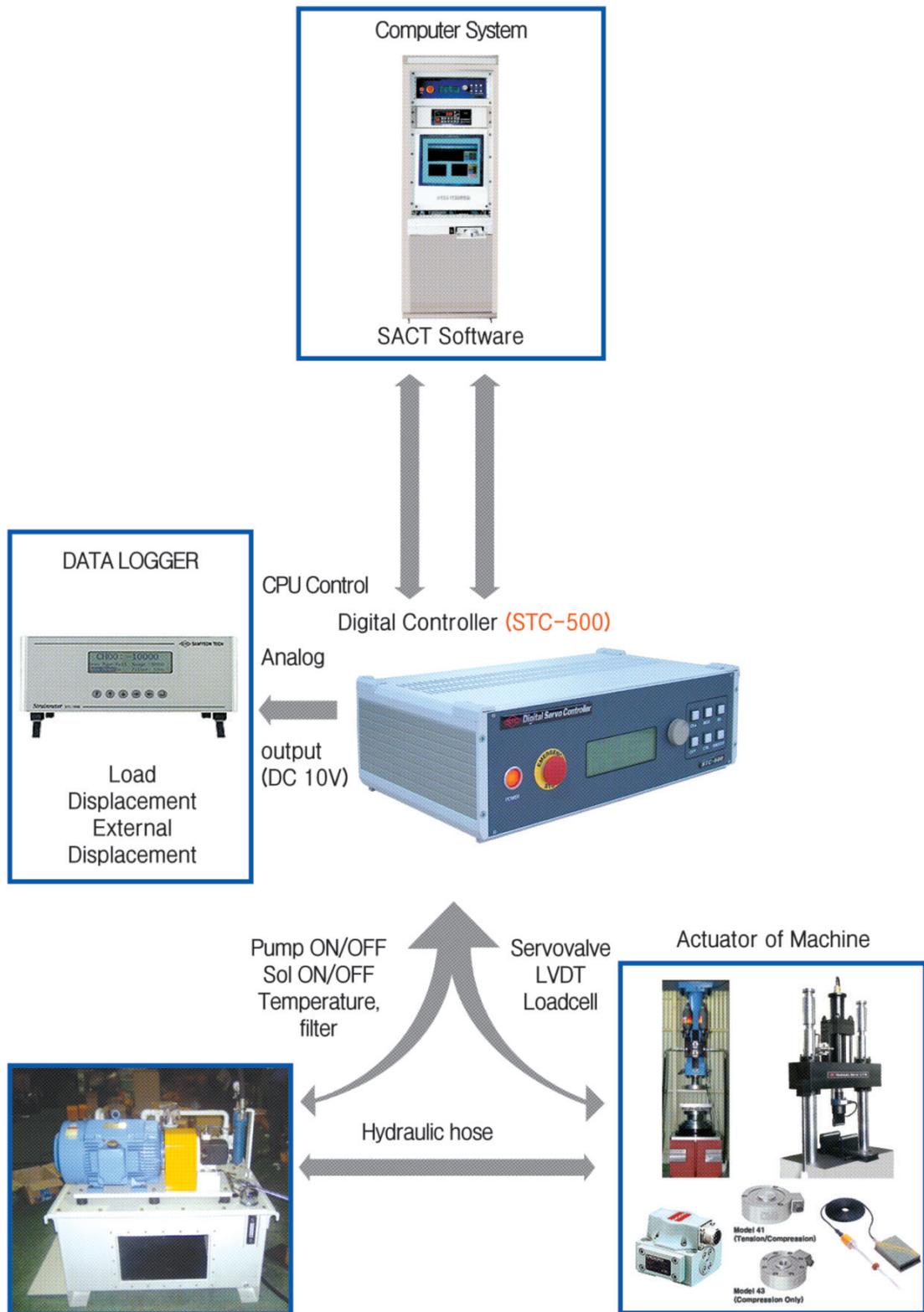
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# System Layout



## System Configuration Chart



# Digital Servo Controller



## System Advantages

### STC-500D, Digital Controller

- 32bit, 150MHz DSP Board.
- Digital Control by TCP/IP
- Up to 6 Actuator Control



- Servo Valve Control Servo Motor Linear Motor Control
- High rate Control(15KHz)
- SACT, Operating & Data Acquisition
- Stand Alone or PC Operating
- TCP/IP

# Digital Servo Controller



## System Specification

- PID Close Loop Controller for Hydraulic Servo Valve & Servo Motor
- Multi Channel Expandable, up to 6 Channel per board
- Large LCD Display
- Control by TI 150MHz. 32 bit DSP board
- Data Acquisition by TCP/IP
- Signal Conditioning 5 KHz C.F. Measuring Amplifier
- Limit Function of force, Displacement
- Stand alone or PC Operation

Parameter		Specification
Servo control	Channel	1 to 6 Channel per board
	Test object	Any transducer (Load, Displacement, Strain)
	Parameter	$\pm 10v$ , 0~50mA
	Frequency	0.001 to 1000Hz
	Control	Basic wave (sine, ramp, triangle etc) User-define mode External spectrum loading mode Profile (one, multi, Batch profile)
	Test Mode	Force, displacement
Control loop		15KHz
Main CPU		TI 150MHz, 32bit DSP Board
Input	Analoge	6Channel, $\pm 10V$
	Digital	4Channel
	Encoder	2Channel (TTL or Line drive)
Output	Analog	$\pm 10V$ , 6 channel
	Digital	4Channel
Data Acquisition		TCP/IP
Signal Conditioner		Strain amplifier 5KHz, 0.03%, built in lowpass filter Dimension
Dimension		450(W) $\times$ 270(D) $\times$ 135(H) mm 19" Rack mounted type (option)
Power input		220V, 60Hz

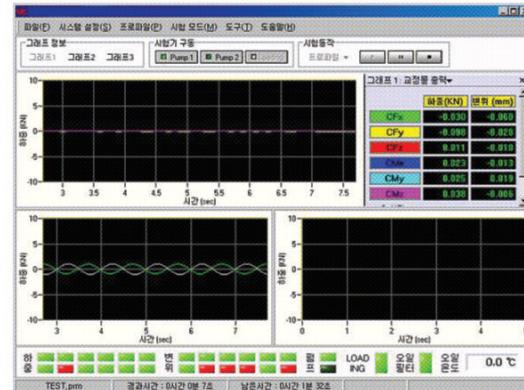
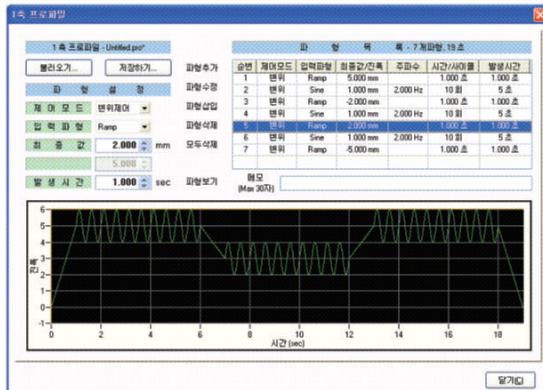
## SACT PROGRAM

### Multi Channel Control(Max. 18ch)

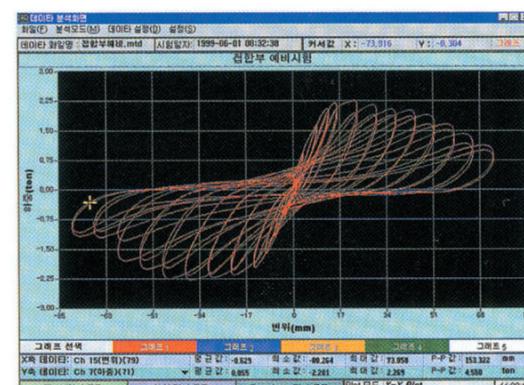
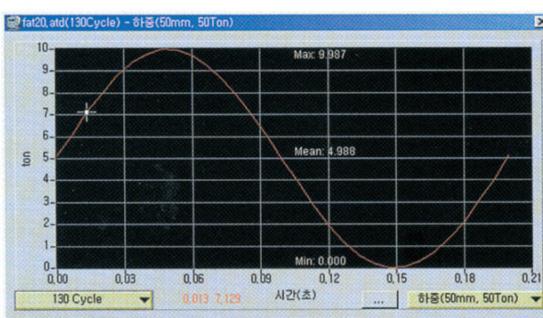
1. Windows XP Operating
2. Excel, ASC II , File Convert
3. Stress, Stroke Graphic
4. Cycle Count
5. LAN(TCP/IP) Data Acquisition
6. S/N Curve, Strain(%) Young Modules, Poisson's ratio
7. Random & Spectrum Loading Mode(Option)

Hydraulic Servo Material  
Testing Machine

## Control Mode



## Analysis



# Hydraulic Servo Actuator



## Hydraulic Servo Actuator

### Hydraulic Servo Actuator System



1. Strength test of construction, engineering, other structures with the temporary control volume (load, displacement, strain) by the various waveforms
2. Behavior test of structure following earthquake and the like
3. Dynamic load simulation received during the running of automobile and vehicle.
4. Durability test on dynamic load received during the operation of heavy equipment component
5. Durability experiment of load received from the large vehicle running on the ground, underground materials (major facility like electricity, gas and others) and building surface



## Main Use

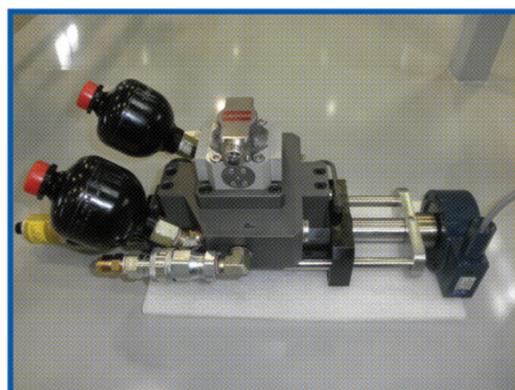
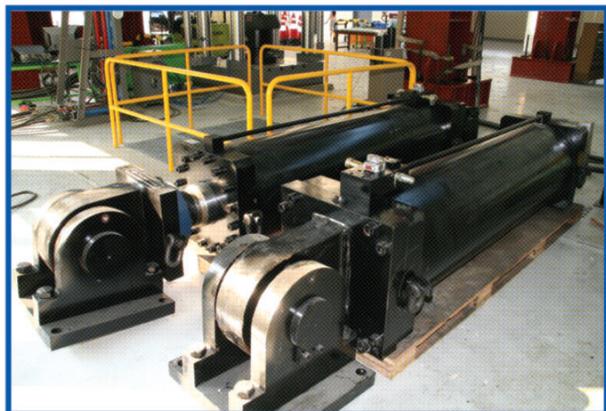
### System Advantages

- For a domestically produced goods, it performs more thorough A/S in comparison to the foreign product with many supply performance records of up to 3,000 tons.
- STC-500 hydraulic servo control board, developed in several years, can test from 0.01-100Hz and the direct control is done on PC for load, stroke and stain or stand alone.
- Swivel head, swivel base, compression plate, PC system and NI 16bit A/D, 16bit D/A transducer are supplied with standard product
- For high density ( $\pm 0.5\%$ ) and durability, the major measuring devices use the products of worldwide makers including SENSOTEC load cell, SANTEST LVDT, MOOG servo valve, NI 16bit A/D, 16bit D/A transducer.
- The jig device for performing various tests is promptly supplied.
- Software SACT program has a variety of models and is convenient for use. It works on a PC that performs the control and the data acquisition at the same time. Load and stress vs. displacement graph, load and stress, displacement vs. time graph, and load, stress, displacement vs. time graph are shown on monitor for graphic in real time simultaneously with the test. The test is performed while observing the result value to save and print. When necessary for amendment during the use, the up-grade is easily done.
- Dynamic and static strain meter (option) for 16 bit is supplied in low price to precisely measure the displacement, load, vibration, strain and the like.

# Hydraulic Servo Actuator



## Liner Actuator



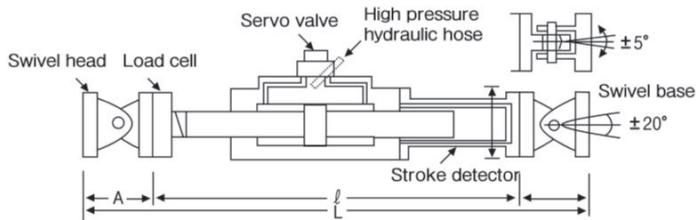
Hydraulic Servo Material  
Testing Machine

# Hydraulic Servo Actuator



## Actuator

### Linea Actuator



Type	Dynamic Actuator			Static Actuator			
	Capacity (kN)	Stroke (mm)	Size $\ell$ L	Type	Capacity (kN)	Stroke (mm)	Size $\ell$ L
STC-10D	±100	±100	1000 1600	STC-10S	±100	100 300	600 750 1200 1350
STC-20D	±200	±100	1200 1800	STC-20S	±200	150 300	750 850 1300 1650
STC-50D	±500	±150	1450 2250	STC-50S	±500	150 300	800 900 1600 1750
STC-100D	±1,000	±150	1800 2600	STC-100S	±1,000	150 300	900 950 1700 1850
STC-200D	±2,000	±200	2000 2500	STC-200S	±2,000	300	1100 2050
STC-500D	±5,000	±250	2300 3000	STC-500S	+5,000 -3,000	500	1500 2000

### Rotary Actuator

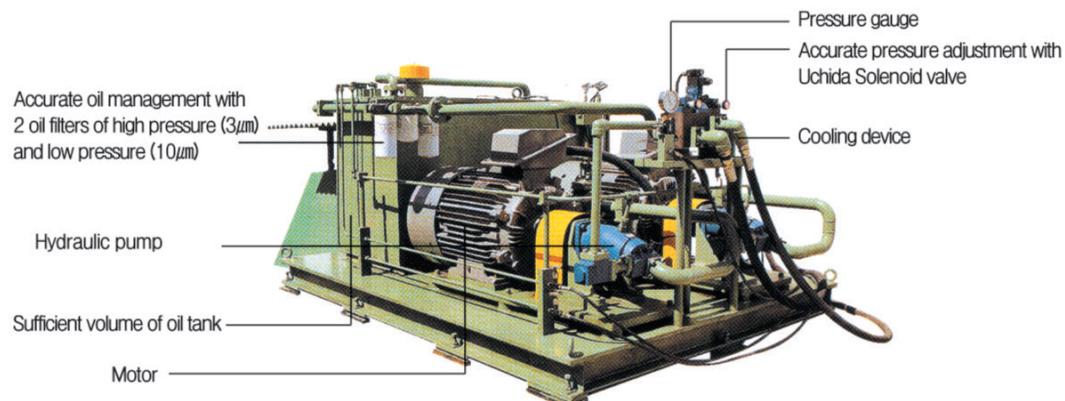
- Vane Type : Single vane (Low-capacity)  
Double vane (High-capacity)
- Torque capacity : 500N · m, 5KN · m, 10KN · m, 25KN · m, 50KN · m
- Rotation
  - Static : 100°
  - Dynamic : 90°





## Hydraulic Power Unit

### Hydraulic Power Unit



### Specifications

Type	Flow( l /m)	Motor	Cooling ( l /m)	Available Jack	
				Dynamic	Static
STC-P1	11	5.5kw	10		STC-10S/STC-20S/STC-50S
STC-P2	19	11kw	20	STC-10D/STC-20D	STC-50S/STC-100S
STC-P3	60	22kw	40	STC-20D/STC-30D	STD-200S
STC-P4	120	22kw×2	75	STC-30D/STC-50D	
STC-P5	162	37kw×2	150	STC-50D/STC-100D	
STC-P6	228	55kw×2	200	STC-100D/STC-200D	
STC-P7	324	75kw×2	300	STD-200D	



## Hydraulic Pump Unit



# Hydraulic Servo Actuator



## Hydraulic Power Unit



STCP-5

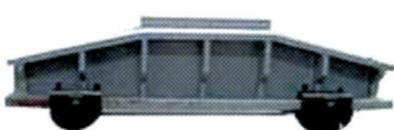
## Jig



Compression Plate-Standard



Tension Grip-Optional



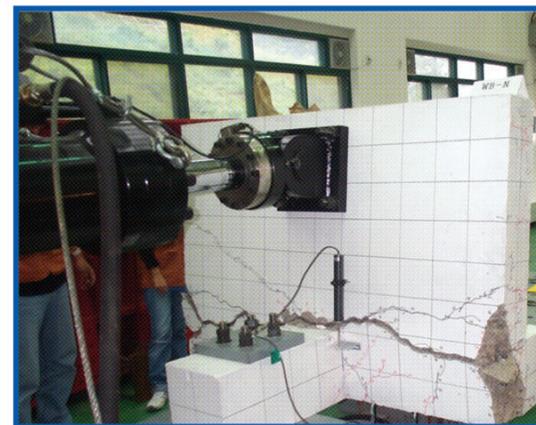
Bending Jig

### Structral Test Lab

- Tunnel Test



- Concrete Lab.



# Hydraulic Servo Actuator



## System Application

- Concrete Lab.



- Box Test



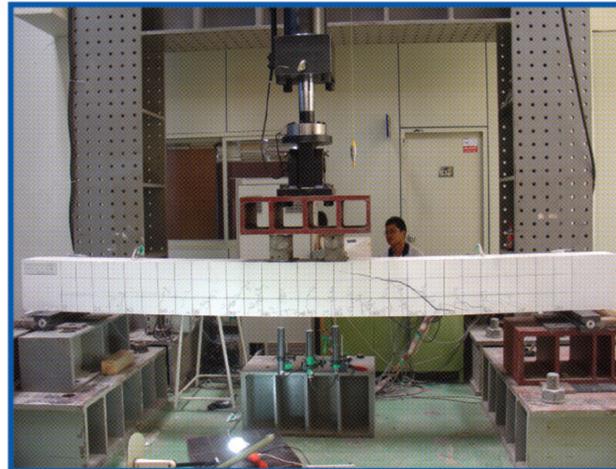
- Bending Test



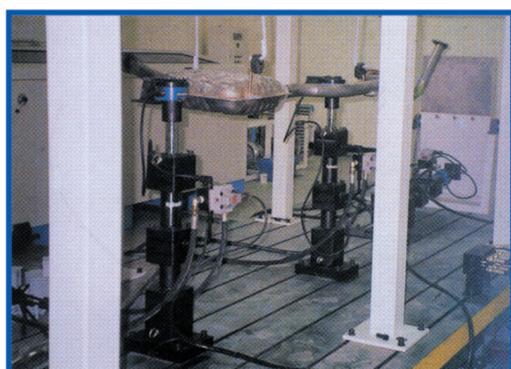


## System Application

### Structral Test Lab



### Motor muffler Test



Hydraulic Servo Material  
Testing Machine

# Hydraulic Servo Actuator



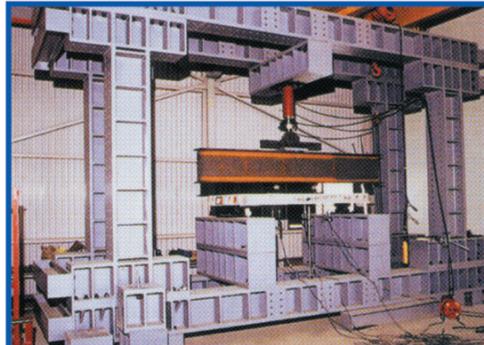
## System Application





## Frame & Jack

### Reaction Frame



Hydraulic Servo Material  
Testing Machine

### Hydraulic Jack



- Power pump function Order-manufacture in addition to this dimension (hollow style, etc.)

Capacity (tf) (Compression/Tension)	Stroke (mm)	Load Cell	Hydraulic Pump
30 / 15	150 / 300	30 Ton, tension/compression	combined manual
50 / 25	150 / 300	50 Ton, tension/compression	combined manual
100 / 50	150 / 300	100 Ton, tension/compression	combined manual
200 / 100	150 / 300	200 Ton, tension/compression	combined manual

# Hydraulic Servo Fatigue Tester



## Hydraulic Servo Fatigue Tester

### Hydraulic Servo Fatigue Tester Machine

Fatigue tester is equipped with low loading type hydraulic servo actuator on the loading frame that is sound and easy for operation. And it is the newest model that is appropriate for research and development, and is guaranteed for fast test speed, accurate control, precise measurement and durability.

This system is structured with loading frame, actuator, hydraulic unit (including servo valve), accumulator, servo control plate, PC system \*16 bit A/D, 16bit D/A, card loaded) and control and data acquisition program.

### Loading Unit(Model:SF-5M)

It uses the hydraulic pump and Moog servo valve of sufficient flow rate to enable the experiment of high frequency and realization of fast test speed.

The loading unit with sound and simple cross head vertical movement has a fine durability. SACT Program that realized the accurate control and precise measurement simultaneously has abundant and various functions.



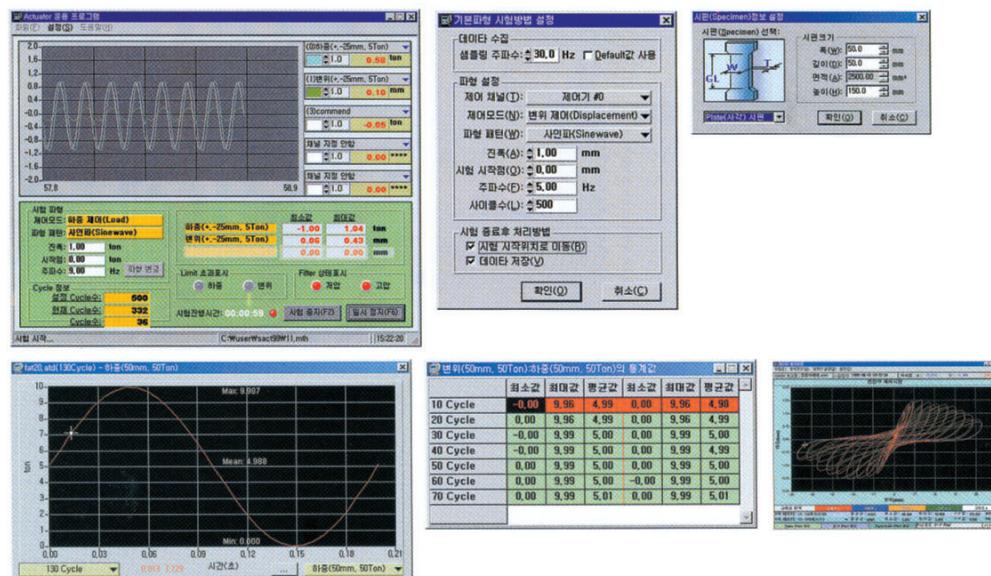


## Hydraulic Servo Fatigue Tester

Control Mode

### SACT Ver.2 Operating Program

- Window XP ■ For static and dynamic fatigue test
- Graphic of Load, vs displacement ■ Cycle count
- Analysis : S-N Curve/Elastic modulus/Energy ■ Test mode : Basic/User define/External wave



Analysis Mode

### Digital Servo Controller

Control object	Load, Displacement, Strain etc.
Large size LCD display	
Control mode	Basic, user define, External wave loading by sine, ramp, triangular etc
Frequency	0.001 to 1000 Hz
Control loop	P.I.D close-loop
A/D channel	16
32bit DSP Board	150MHz
Data acquisition	NI 16 bit PCI card
Signal conditioning	HBM 5 KHz C.F Measuring Amplifier
Control Method	Stand alone or PC Control

### Specifications

형명(Type)	SF-0.5M	SF-1M	SF-2.5M	SF-5M	SF-10M	SF-25M
Load(kg)	500	1000	2500	5000	10000	25000
Stroke(mm)	±25	±25	±25	±25	±25	±25
Load Accuracy(%)	±0.5% 이내					
Displacement Accuracy(%)	±0.5% 이내					
Type	Croshead up-down → by cylinder					
Loading	Between Column(mm)	450		650		
Frame	Testing Space(mm)	400		500		
	Dimension(mm)	300×450		400×650		
Pump Unit	Model	SP-1	SP-2	SP-3	STC-1	STC-2
	Flow Rate( l /min)	3.4	5.6	9.5	11	38
	Motor(kW)	0.75	1.5	2.2	5.5	11
	l/min	3.4	5.6	5.5	11	38
Load Cell	Tension & Compression(0.1%)					
Stroke Detector	Non-Contact Displacement Transducer					

# Hydraulic Servo Fatigue Tester



## Torsion Fatigue Testing Machine

### Rotary Actuator Advantage

- 1 Low-Hydraulic axial load on drive shaft
- 2 Four-point Bearing
- 3 Modern sealing technology
- 4 Wear-resistant moving parts
- 5 High perfected end cushion



50kN Torsion Fatigue Tester



STC-500 Controller

### Specifications

Model		STC-RT200	STC-RT500	STC-RT1000	STC-RT2000	STC-RT5000
Rotary Actuator	Rated torque	±2	±5	±10	±20	±50
	Linearity			±0.1%		
	Angular			±60°, ±90°		
	Linearity			±0.1%		
Angular Displacement Transducer	Test Bench(mm)	2400(L) × 600(W)		2500(L) × 650(W)		
	Max. Specimen Length(mm)		1.400			
	Servo valve(Moog)	G761(63L/min)	G761(63L/min)	G761×2(120L/min)	J072(228L/min)	
	Hydraulic Pump Unit	STC-P3(60L/min)		STC-P4(120L/min)	STC-P5(228L/min)	
	Digital Servo Controller			STC-500		
	Operating Software			SACT Ver.2, SAS data acquisition software		

# Biaxial Fatigue Tester

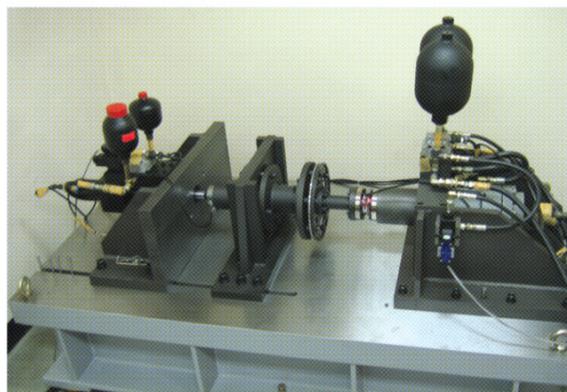


## Biaxial Fatigue Tester

Hydraulic Servo Material  
Testing Machine

### System Advantages

- Combined stress of the axial load and torsional torque in same or in optional different phase
- Actuator
  - Linear Actuator : 5, 10, 50, 100 kN
  - Rotary Actuator : 200, 500, 1000, 2000 kg-m
- Consist of : Frame unit, Linear Actuator, Rotary Actuator, Hydraulic Power unit, 2 axis Servo controller, Software and Tension jig



STC-BF. Biaxial Fatigue Teste



Hydraulic power supply

# Hydraulic Servo Structural Testing Machine



## Hydraulic Servo Structural Testing Machine

### System Advantages



#### ■ Loading Frame

- 1 High Frequency Fatigue test
- 2 Croshead up-down by Hydraulic lifting cylinder
- 3 Hydraulic Locking

#### ■ Hydraulic Servo power unit

- 1 Close-loop Cooling system
- 2 3μm Filter system

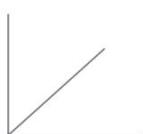
#### ■ Controller

- 1 32 bit 150 MHz DSP Digital Controller
- 2 PID Gain Control
- 3 Auto turning, Auto zero
- 4 Cycle display
- 5 Load & Stroke limit Function
- 6 Stand alone or PC Control



## Program

### Control Mode



Constant speed control  
(Load, Strain, Ram)



Constant speed control  
(Constant ram speed)



Basic cycle



User-define Control  
(Profiler, Batch profiler)



External wave  
Control

## Hydraulic Servo Structural Testing Machine



2500KN/500KN Fatigue



1000KN Fatigue



500KN Actuator Frame



400KN Total 6축

### Specifications

Model	STC-LS100	STC-LS200	STC-LS500	STC-LS1000
Loading Unit				
Max Load				
Static(kN)	1000	2000	5000	10000
Dynamic(kN)	750	1500	3000	5000
Testing Height(mm)	3000	5000	7000	10000
Table Size(mm)	1200×900	1300×1000	2000×1500	2500×2000
Testing Speed	0.001 to 200mm/sec (Depend on Hydraulic power unit)			
Testing Frequency	0.001 to 30Hz			
Servo Actuator				
Type	Double Acting, One Rod(Optional Hydrostatic bearing type)			
Max load(kN)	±1000	±2000	±5000	±10000
Stroke(mm)	300	300	400	500
Load cell(kN)	±1000	±2000	±5000	±10000
Accumulator	4L, 10L(Depend on Hydraulic power unit)			
Servo valve	Moog 63L~150L/min(Depend on required testing speed)			
Stroke detector(mm)	300	300	400	500
Option	Hydraulic tension grip			

# Hydraulic Servo Structural Testing Machine

## Digital Servo Controller

Control Object	Load, displacement, strain etc.
Large Size LCD Display	
Control Mode	Basic, user define, External wave loading by sine, ramp, triangular etc
Frequency	0.001 to 1000 HZ
Control Loop	P.I.D close-loop
A/D Channel	6
32bit DSP Board	150MHz
Data Acquisition	TCP/IP
Signal Conditioning	HBM 5 KHz C.F Measuring Amplifier
Control Method	Stand alone or PC Control

## SACT Ver.2 Operating Program



- Window XP
- For static and dynamic fatigue test
- Graphic of Load, vs displacement
- Cycle count
- Analysis : S-N Curve/Elastic modulus/Energy
- Test mode : Basic/User define/External wave

## Hydraulic Servo Structural Testing Machine

### System Application

- 1000 kN Fatigue Test



- Hyd. Grip



- 1000 kN Fatigue



- Transmission Test



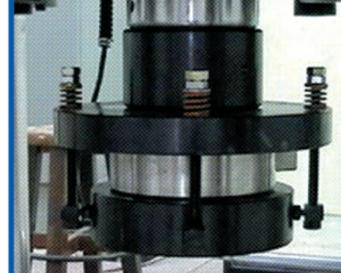
# Hydraulic Servo Structural Testing Machine



## Tester & Accessories



Grip



Compression Plate-Standard



Jaw



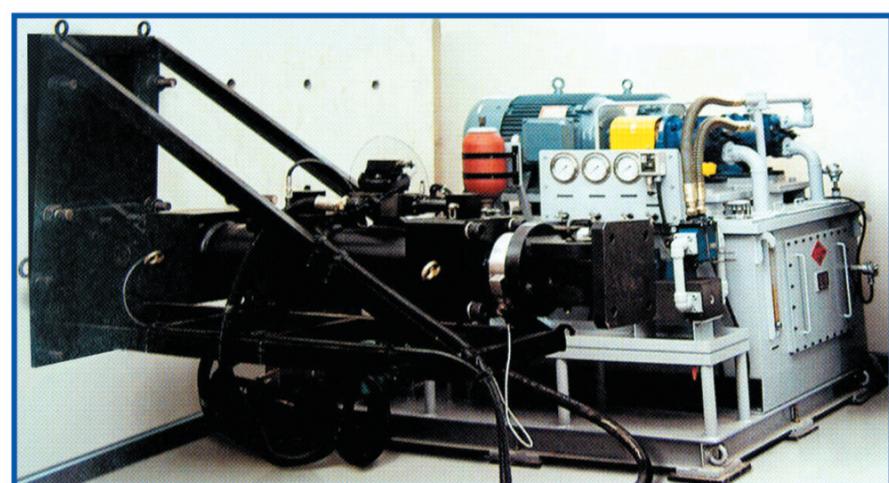
Hydraulic grip



Bending Jig



Tension Grip-Optional



STC-P5 Hydraulic Power unit with linear Actuator

## Foundation



## Parts



➡ Servo Valve

- Flow rate 1 stage : 3.8~228Lpm
- 2 stage : up to 1500Lpm.
- Pressure : 210 bar, 350 bar
- MOOG (U.S.A)



➡ Load Cell

- Capa : 1kN~10MN
- Composion & Tension Type Comperssion Type
- Precise
- Static Type and Fatigue rated Type.



➡ Stroke Detector

- Non-Contact Stroke Detector
- 50mm~2000mm
- ±0.05%
- Santest (Japan) or MTS (USA)



➡ N.I. A/D. D/A Converter

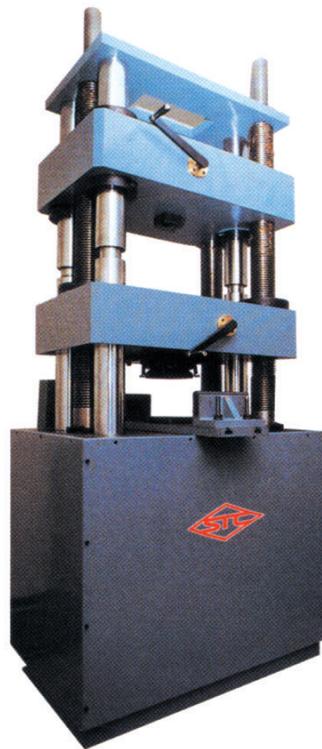
- 16Channel, 16bit Resolution
- Analog : 2Channel

# Universal Testing Machine



## Universal Testing Machine

### Loading Unit



- 1 Sound 6-column frame (Over 200 tons)
- 2 Open type hydraulic grip (Option)
- 3 It penetrates all cross-head 6-column to have outstanding stability and durability
- 4 Precise load cell
- 5 This stroke detector has one for tension and one for compression. It detects the stroke to calculate automatically for precise load vs. displacement graph and the modulus of elasticity.
- 6 The load maintenance is accurate with the dual hydraulic cylinder.



### Specifications

Model	STC-US10	STC-US25	STC-US50	STC-US100	STC-US200	STC-US300
Maximum capacity (tonf)	10	25	50	100	200	300
Load (tonf)	0.01~10.00	0.01~25.00	0.01~50.00	0.01~100.00	0.01~200.00	0.01~300.00
Load Accuracy (%F.S)	±0.5	±0.5	±0.5	±0.5	±0.5	±0.5
Sensitivity (Kgf)	1	2.5	5	10	20	30
Displacement accuracy (%F.S)	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01
Flow rate of servo valve (l/min)	3	5	7	9.5	9.5	15
Oil filter (μL)	6	6	6	6	6	6
Air cooling system	1.7	2.5	2.8	5	5	6
Tension distance (mm)	600	650	700	800	1050	1100
Table size (mm)	650×500	800×550	850×600	900×650	900×750	1,250X850
Stroke of ram (mm)	200	220	220	250	250	300
Diameter of compression (mm)	Φ90	Φ100	Φ160	Φ160	Φ220	Φ220
Width of bending punch(mm)	50	80	80	100	120	150
Testing speed (mm/min)	200	200	150	100	100	100
Cross-head movement speed (mm/min)	220	220	220	220	220	220
Hydraulic pump	0.75KW	0.75KW	1.5KW	2.2KW	3.75KW	5KW
Machine weight (Approx)(ton)	1.5	2.1	2.5	3.2		9
Machine size (Approx)(mm)	700(W)×500(D)×1300(H)	800(W)×500(D)×1800(H)	880(W)×600(D)×1900(H)	850(W)×650(D)×2000(H)	1050(W)×650(D)×2300(H)	1350(W)×650(D)×2400(H)
Hydraulic grip				OPEN TYPE(선택사양)	OPEN TYPE(선택사양)	OPEN TYPE(선택사양)
Controller	STC-500 Controller, SACT Ver.2 program, PC System					

## Structural

### Loading Unit



The importance of testing research for securing the safety and durability of a variety of high structures following high speed of transportation for construction buildings is getting increased on a daily basis.

The structure tester is designed in large scale (in the event of 200 tons, the tension distance of 2,200mm or more, table size of 3,000 × 800 mm) to directly apply the force on the testing object of structure.

It performs the tension, compression and curvature tests of testing object of structure.



### Specifications

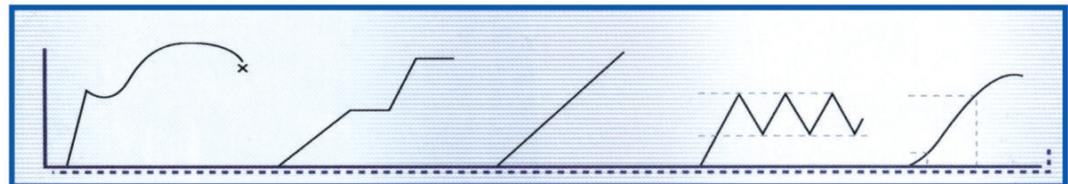
Model	STC-USS100	STC-USS200	STC-USS300
Maximum capacity (tonf)	100	200	300
Load (tonf)	0.01~100.000	0.02~200.000	0.03~300.000
Load Accuracy (%/F.S)	±0.5	±0.5	±0.01
Tension distance (mm)	1800	2200	2700
Table size (mm)	2100×700	3000×1000	3500×1200
Stroke of ram (mm)	250	250	300
Diameter of compression (mm)	Φ160	Φ220	Φ220
Test speed (mm/min)	110	110	110
Cross-head movement speed (mm/min)	220	220	220
Hydraulic pump	3.7	5.5	7.5
Flow rate of servo valve (ℓ/min)	9.5-	9.5-	15-
Controller	STC-5WS	STC-5WS	STC-5WS
Oil filter (μℓ)	3	3	3
Air cooling system			
Hydraulic grip	Optional	Optional	Optional
Machine weight (Approx)	6	11	15
Machine size (Approx)(mm)	2100(W)×700(D)×4500(H)	3000(W)×1000(D)×5210(H)	3200(W)×1200(D)×5800(H)

# Universal Testing Machine



## Program

### UTM Program- integrated with Control and Data acquisition



■ Tensile Testing

(Stress → Displacement Control,  
Static Load → Static Speed)

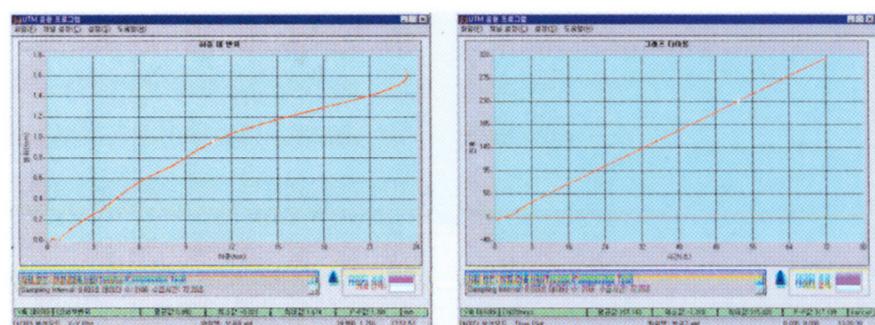
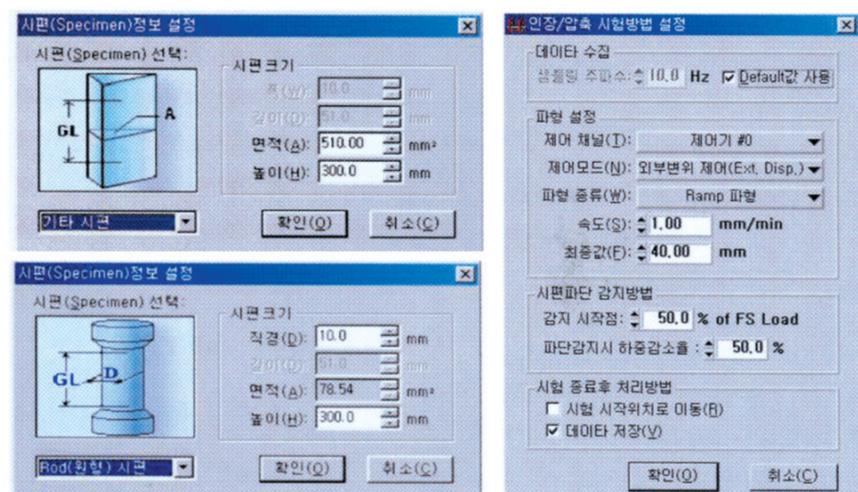
■ Multistage Control

(Load, Displacement, Strain)

■ Fixed Speed,  
Fixed Load Control.

■ Low Speed Fatigue  
Testing  
(Load, Displacement)

■ Concrete Compression  
Testing





## UTM Chamber

### UTM Chamber



1. This equipment is adhered to tensile strength tester. It can be tested according to choice of temperature, humidity , ultra low temperature or high temperature otherwise it also can be applied to FIRE testing.

#### 2. Option

- Recorder (Temp', Humity)
- PC communication
- Side Hole ( Gauge Adhesion Hole)
- Touch Screen Type
- Height Control

Model Spec	ACE-HC -96H	ACE-HC -150H	ACE-HC -250H	ACE-HCL -96L	ACE-HCL -150L	ACE-HCC -250H		
In Size (W/D/H)	400×400 ×600(mm)	500×500 ×600	500×500 ×1000	400×400 ×600	500×500 ×600	600×600 ×800		
Out Size (W/D/H)	500×700 ×700(mm)	600×800 ×700	600×800 ×1100	500×700 ×750	600×800 ×750	600×800 ×1150		
In Material	SUS 304 Plate							
Out Material	SUS 430 Plate Painting							
Temp' Controller	Program Controller							
Temp' Range	RT+10°C ~ 250°C MAX				-170°C ~ 400°C MAX			
Temp' Accuracy	300°C at ±3°C				-70°C at ±50°C			
Heater	Kanthal Pipe Heater							
Thermo-Couple	Pt 100 Ω							
Power	AC 220V 1φ 60Hz							
Watts	2.8kW	3.5kW	4.8kW	3.0kW	3.8kW	5.5kW		

# Cable Water Proof Testing Machine

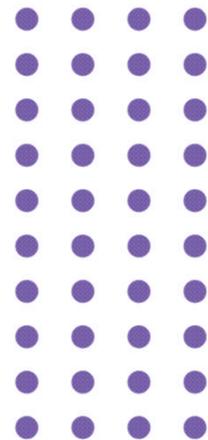


## ■ Cable Water Proof Testing Machine

- 1) Vertical : 20M.N Static
- 2) Horizontal : 500KN Dynamic
- 3) Temperature Chamber
- 4) Auto Setting
- 5) Hydraulic Servo Actuator



# SERVO TYPE SOIL & ROCK TESTER



# Servo Direct Shear Tester



## System Advantage

1. Dual Use for Rock & Soil Shear Test
2. Servo Motor or Hydraulic Servo Control by Digital PID Close-Loop Servo Controller with PC
3. Removed the Rotational Moment From Rough Joint Surface
  - 2 Roller Bearing on the Horizontal Axle
  - 2 LM-Guide Bearing on the Vertical Axle
4. Insert Inner Shear Box to Pre-Made External Box
5. Control and Data Acquisition Performed in one Software

- New Direct Shear Apparatus for Rock Joint & Soil



## Servo Controller

1. Digital PID Close Loop Servo Controller
2. 2 Channel (Vertical Actuator and Horizontal Actuator) Each Load & Displacement
3. Signal Condition of Load & Displacement
4. PC Base Controller
5. 19" Rack Mount
6. Data Acquisition by NI 16 Bit PCI Card
7. Data Transfer to Text File and ASCII File



## Operating Program

1. Window XP
2. For Static & Dynamic Test
3. Real Time Graphic of Load, Displacement VS Time Load & Displacement
4. Test Mode

Constant Stress Test

Constant Compression Test

Constant Stiffness Test

$$K = \frac{d\sigma}{dv} \quad \alpha = \frac{\Delta P}{Bx(L - \Delta L)}$$

Cycle Test

5. Control Mode

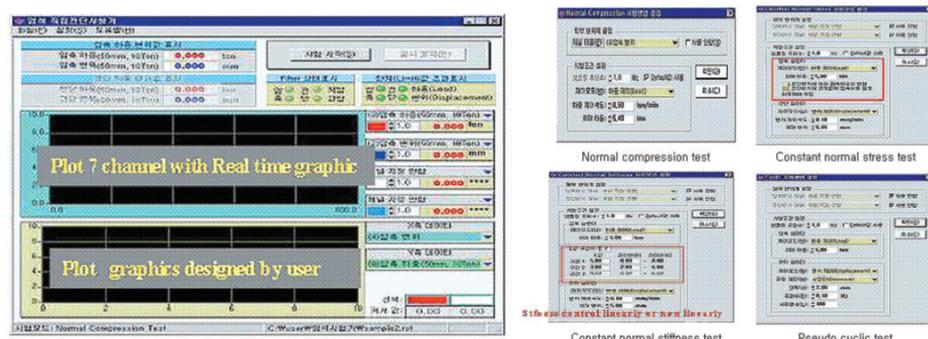
Basic Control (Sine, Triangle, Ramp etc)

Profile Control

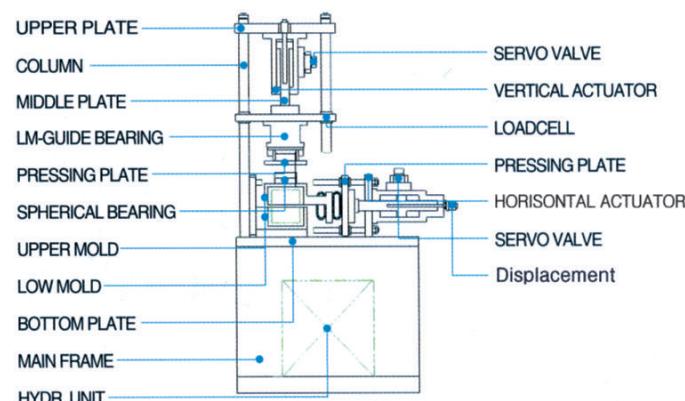
Batch Profile Control

6. Variable Function : Cycle Count, Limit of Force and Stroke, S/N curve, Print Out

7. Transfer to Text File and ASCII File



## Servo Controller

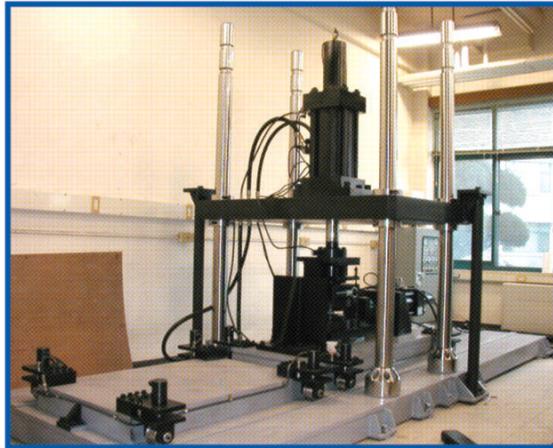


# Servo Direct Shear Tester

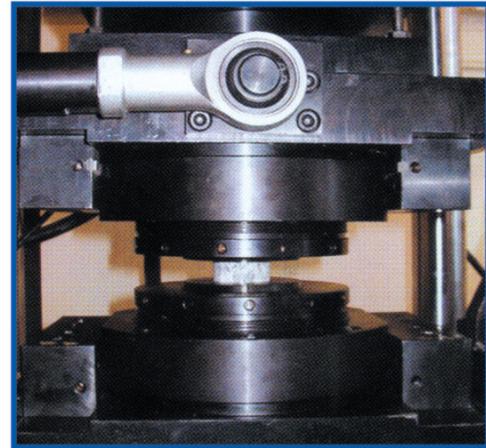


## Application

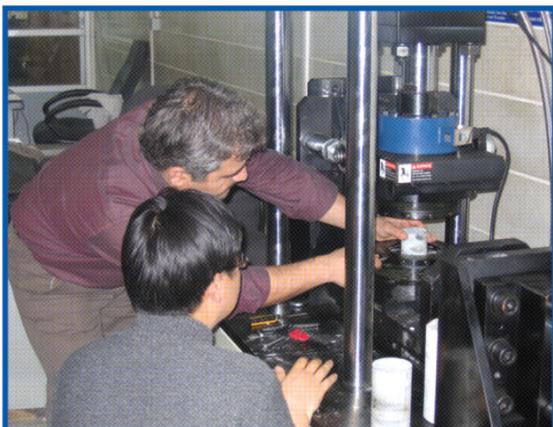
- 500kN, 2Axial



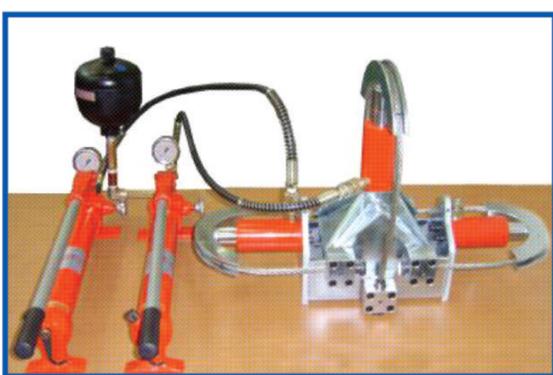
- Rock Test



- Rock Test(IRAN)



- Manual type shear tester





## Specification

Mode	STC-SD 50	STC-SD 100
Frame		
Capa city	50KN	100kN
Dimension(Approx)	1000(W)×500(D)×1400(H)	1000(W)×500(D)×1400(H)
Servo Actuator		
Type of Actuator	Servo valve(Moog)	Servo valve(Moog)
Vertical Load and Stroke	50KN, 100mm	100KN, 100mm
Horizontal Load and Stroke	50KN, 150mm	100KN, 150mm
Load cell	±50KN(2ea)	±100KN(2ea)
Displacement Transducer	100mm and 150mm	100mm and 150mm
Controller		
Model	STC-500S(2channel, 4 object, 19" Rack, NI-PCI card)	
Hydraulic Pump Unit		
Motor	1.5kW, 3φ, 380V	1.5kW, 3φ, 380V
Flow rate	5 ℥ /min	5 ℥ /min
Filter(3um)	Yes	Yes
Cooling Unit	Yes	Yes
Data Processing		
Pentium IV PC System (4 Ch or 16 Ch Datalogger(option))		
Operating Program		
SACT Ver.2 (2 Ch (4Object) control, 12 Ch Data Acquisition)		
Shear Box		
$\phi 60\text{mm}$ 100×100mm 200×200mm(Option)		

# Rock Triaxial Tester

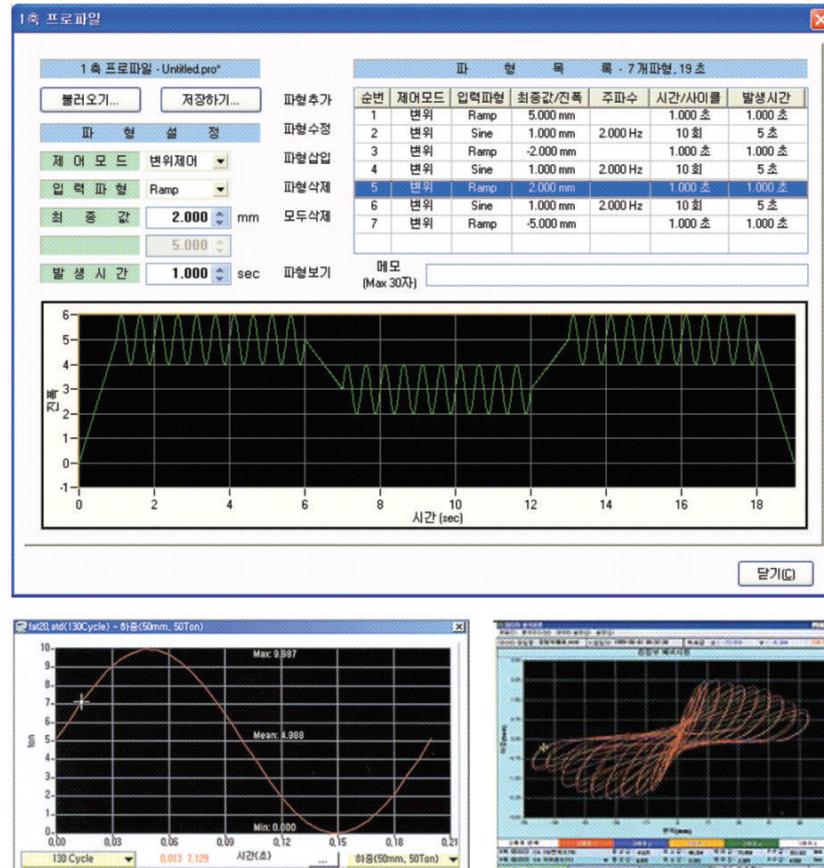


## System Advantage

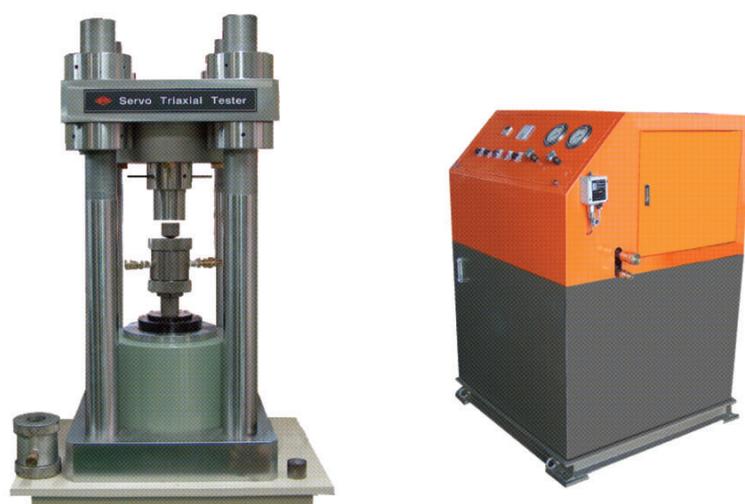
1. Hydraulic Servo Static and Dynamic Test
2. Digital PID Close-Loop Hydraulic Servo Control by PC
3. Control and Data Acquisition are Performed in one Software(SACT Ver.2)
4. Compression Test Available
5. Built in Four Channel Data logger for Load, Strain, Pore Pressure and Volume Sensor
6. Read Time X-T and X-Y Graph
7. Cell Pressure Control by Manual or Servo Valve(Option)



## Operating Program



- 200 TON Rock Triaxial Tester



# Rock Triaxial Tester



## Specification

Model	STC-RO 100	STC-RO 200	STC-RO 300			
Frame						
Capa(Ton)	100	200	300			
Testing Area	400×400×550(H)	450×450×600(H)	600×600×800(H)			
Servo Actuator						
Capa(Ton)	100	200	300			
Stroke(mm)	100	100	150			
Servo Valve	Moog	Same as left	Same as left			
Load Cell(Ton)	100	200	300			
Stroke Detector	SANTEST Non Contact Type					
Hydraulic Pump Unit						
Motor	1.5kW	2.2kW	3.7kW			
Flow Rate	2.6 ℥ /min	3.6 ℥ /min	5.6 ℥ /min			
Cooler	Air Pan Type					
Filter	3um High & 10um Low Filter System					
Digital Servo Controller STC-500						
Control Object	Load, Displacement, Strain etc					
Control Mode	Basic, Multi Profile/Batch Profile (Sine, Ramp, Triangular etc)					
Frequency	0.001 To 1000Hz					
Control Loop	PID Close-Loop					
A/D Channel	16					
32bit DSP Board	60MHz					
Data Acquisition	NI 16bit PCI Card					
Signal Conditioning	HBM 5kHz C.F Measuring Amplifier					
Control Method	Stand Alone or PC Control					
Data Acquisition						
4 Channel 16 Strain Amplifier (Option)						
Operating Program SACT Ver.2						
Windows XP						
For Static and Dynamic Fatigue Test						
Graphic of Load, VS Displacement						
Analysis : S.N Curve/Elastic Module						
2 Channel Control, 12 Channel Data Acquisition						
Cycle count, Limit of Load & Stroke						
Transfer to Text File and ASCII File						
Triaxial Cell						
BX (42.04×85×263mm)						
NX (54.74×100×304mm)						
Other Cell (Option)						

# Triaxial Testing Machine

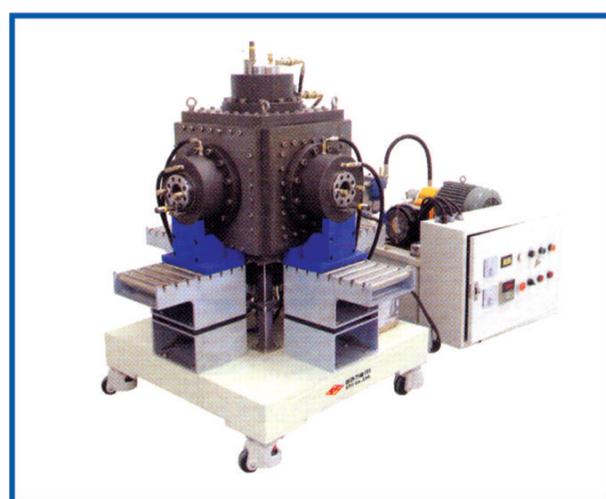


## System Advantage

1. To Perform Quick-Undrained CU/CD Effective Stress, Digital Unconfined Compression Test
2. Digital PID Close-Loop Servo Control by PC
3. Servo Control and Data Aquisition in one Program
4. Built in Four Channel Data logger for Load, Strain Pore Pressure and Volume Sensor
5. Adapter Rod for Customer Supplied Triaxial Cell
6. Read Time X-T and X-Y Graph



Servo Soil & Rock Tester



- Soil Ture Triaxial Tester
  - Specification : by customer request

# Large Scale Oedometer



## System Advantage

1. Digital PID Close-Loop Servo Control
2. Large Scale Cell
3. Built in Cart with Rail for Cell Moving
4. Built in Water Spray Unit and Water Cooling & Measuring unit
5. Control and Data Acquisition are Performed in one Software(SACT Ver.2)
6. Compression test Available





## Specification

Model	STC-OE 100	STC-OE 200		
<b>Loading Frame</b>				
Capacity	100Ton	200Ton		
No. of Column	4 Column	4 Column		
Function	Cell Carrying Car by Rail, Cell Adjustment, Testing Space Adjusting			
Jig	Compression Plate			
<b>Hydraulic Servo Actuator</b>				
Capacity	100Ton	200Ton		
Stroke	300mm	400mm		
Load cell	±100Ton	±200Ton		
Non-Contact Displacement Transducer	300mm	400mm		
Hydraulic Hose	15m	15m		
Servo Valve	Moog 63 ℥ /min	Moog 63 ℥ /min		
<b>Hydraulic Pump Unit</b>				
Motor	1.5kW	2.2kW		
Flow rate	5 ℥ /min	7 ℥ /min		
Filter	3um & 10um	3um & 10um		
Cooling unit	Air Pan Type	Air Pan Type		
<b>Cell</b>				
Size	600(H) × 600(φ)mm with upper & bottom plate	1000(H) × 600(φ)mm 600(H) × 600(φ)mm		
<b>Water Treatment Equipment</b>				
Water Spray During Test				
Water Collecting Box and Water Measuring Unit				
<b>Digital Servo Controller STC-500</b>				
Control Object	Load, Displacement, Strain etc			
Control Mode	Basic( Sine, Ramp, Triangular ) Profile/Batch Profile			
Frequency	0.001 to 1000Hz			
Control Loop	PID Close-Loop			
A/D Channel	16			
32bit DSP Board	TI 60MHz			
Data Acquisition	NI 16bit PCI Card			
Signal Conditioning	HBM 5kHz C.F Measuring Amplifier			
Control Method	PC Control			
<b>Operating Program SACT Ver.2</b>				
Windows XP				
For Static and Dynamic Fatigue Test				
Graphic of Load, VS Displacement				
Analysis : S.N Curve/Elastic Module				
Test Mode : Basic/Profile/Batch Profile				
2 Channel Control, 12 Channel Data Acquisition				
Cycle Count, Limit of Load & Stroke				
Transfer to Text File and ASCII File				
<b>Data Logger</b>				
No of Channel	4Ch, 12Ch			
Measuring object	Strain Gauge, Load cell, Pressure Gauge etc			

# DRI(Drilling Rate Index)

- Siever's J-value Tester



- Brittleness Tester



- Abrasion Tester



# Tunnel Testing Machine



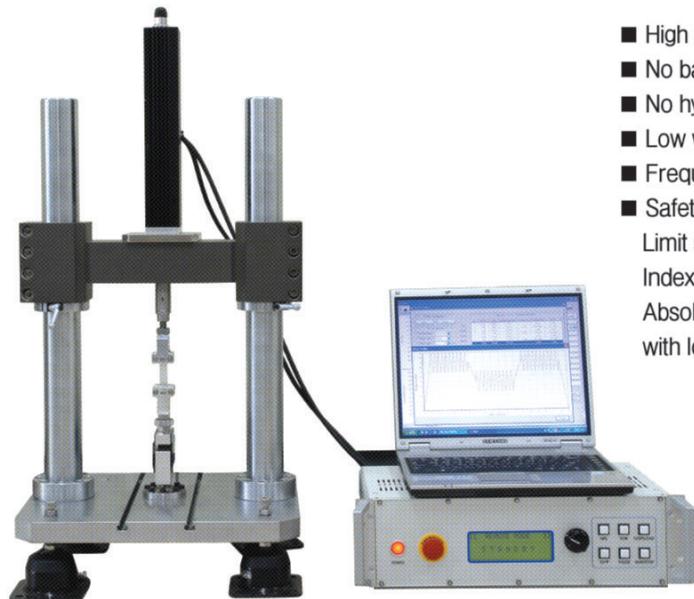
Servo Soil & Rock Tester

Tunnel Testing Machine – KICT



# Micro Fatigue Tester

## Linear Servo Actuator



- High acceleration in excess of 10G
- No backlash
- No hysteresis
- Low watt, Low heat
- Frequency range : 0.005 to 30(50)Hz
- Safety protection  
Limit switch  
Index line / Home position  
Absolute position monitor  
with lose power off in error

## Specifications

Model	STC - MF500	STC - MF250	STC - MF100
vertical type	2 column		
Max load	±500N	±250N	±100N
Stroke	25mm	25mm	100mm
Frequency range	0.001 ~ 30 Hz	0.001 ~ 40 Hz	0.001 ~ 50 Hz
Testing speed	500mm/sec		
Position resolution	5µm (0.5µm option)		
Load cell	±500N	±250N	±100N
Load accuracy	0.5% of F.S.		
Tension Grip	Included		
Size (Approx)	800(W) × 500(D) × 1,000(H)mm		
Weight (Approx)	100kg	70kg	60kg

## Controller Program



Digital Servo Controller STC-500	
Control Object	Load, Displacement, Strain etc
Control Mode	Basic, Multi Profile/Batch Profile (Sine, Ramp, Triangular etc)
Frequency	0.001 To 1000Hz
Control Loop	PID Close-Loop
Control rate	15KHz
32bit DSP Board	150MHz
Signal Conditioning	5kHz C.F Measuring Amplifier
Control Method	Stand Alone or PC Control
Data Acquisition	TCP/IP
4 Channel 16 Strain Amplifier (Option)	
Operating Program SACT Ver.2	

Windows XP

For Static and Dynamic Fatigue Test

Graphic of Load, VS Displacement

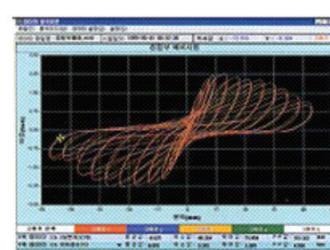
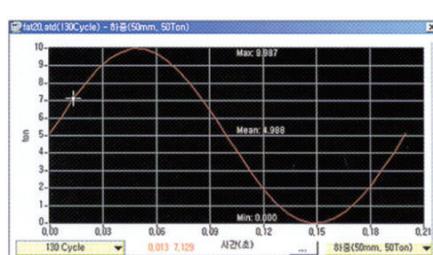
Analysis : S.N Curve/Elastic Module

2 Channel Control, 12 Channel Data Acquisition

Cycle count, Limit of Load &amp; Stroke

Transfer to Text File and ASCII File

## Operating program

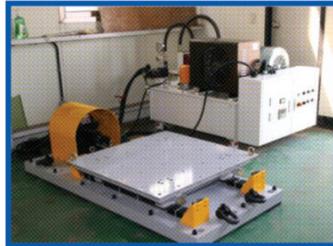


# Hydraulic Servo Vibration Tester



## Hydraulic Servo Vibration Tester

### Loading Unit



Hydraulic Servo Vibration Tester is manufactured to conduct civil engineering , earthquake-resistant test of construction, transport vehicles such as motor vehicle ,ship, air craft and simulation vibration tester of each components transportation of electronics and packing materials or external vibration in using, estimating Self - occurrence vibration.

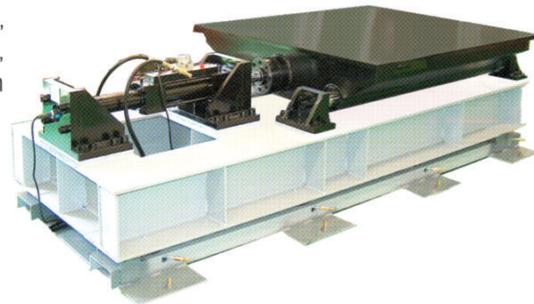
It also designed to perform anti- vibration products performance vibration.

Especially, it has compatibly designed which required big and heavy specimen at high velocity test, large displacement and above 1G's acceleration test.

This tester's main parts are used the world best maker productions : Moog Servo Valve to maintain durability and precision. SANTEST Displacement Detector, PCB Accelerometer , NI A/D,D/A Convertor.

### Composition of Hydraulic Servo Vibration Tester

Hydraulic Servo Vibration Tester is consist of vibration table, Hydraulic Servo Actuator, Hydraulic Pump, Servo Valve, Displacement Meter, Accelerometer, Controller, Operation Program, Various of Jig and components.



### Shaker and Shaking Table

- Hydrostatic Bearing installation ■ Low friction slip table which intalled with detailed LM guide. ■ Monolithic Rod and Piston
- LVDT internal installation ■ Using Special SEAL ■ Anti-impact airspring installatio

Dynamic Actuator	Capacity(tonf)	Stroke(mm)
STC-2D	±2	±100
STC-5D	±5	±100
STC-15D	±20	±150



### Digital Controller

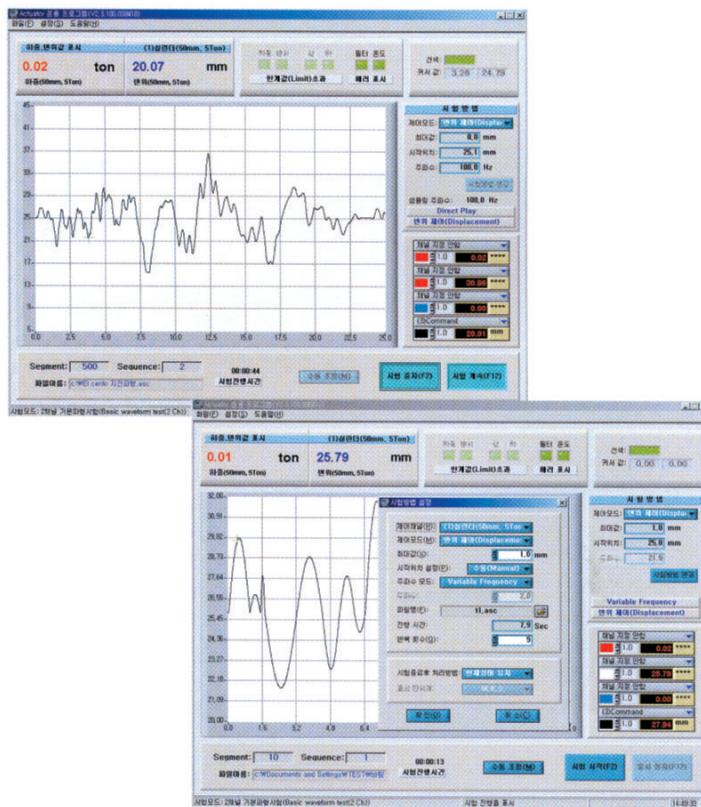
Control object	Load, Displacement, Strain etc.
Large size LCD display	
Control mode	Basic, User define, External wave loading by sine, ramp, triangular etc
Frequency	0.001 to 1000 Hz
Control loop	P.I.D close-loop
A/D channel	16
32bit DSP Board	60MHz
Data acquisition	NI 16 bit PCI card
Signal conditioning	HBM 5 KHz C.F Measuring Amplifier
Control method	Stand alone or PC Control

### SVR Random & Vibration Loading Program for Vibration test

- Inter outside wave foam including earthquake wave foam directly loading or conduct test by changing speed, amplitude , frequency.
- It is hydraulic fatigue tester and vibration tester's operation program which can load random wave foam

#### ■Load , Acceleration Control

#### ■Basic wave foam test-SINE ,HALF ,TRINGLE, RAMP



#### ■Exterior wave foam test

- Constant Frequency : Mode which Amplitude and frequency can be changed at steady speed.
- Constant Rate : Speed, Amplitude, frequency can be changed mode.
- Direct Play : Displayed by outside's wave foam

#### ■Random : Irregular wave foam runned in random amplitude and frequency.

#### ■User Define : Wave foam which defined by user.

# Hydraulic Servo Vibration Tester



## Hydraulic Pump Unit



Hydraulic Pump Unit has designed according to vibration tester's characters such as high speed and high frequency. It provide enough discharge rate and stable temperature control.

Model (Type)	Discharge rate (Flow)(l/m)	Moter	Cooling rate (Cooling)(l/m)
STC-P1	11	5.5kW	10
STC-P2	19	11kW	20
STC-P3	60	22kW	40
STC-P4	120	22kW×2	75
STC-P5	162	37kW×2	150
STC-P6	228	55kW×2	200
STC-P7	324	75kW×2	300

Main parts -Using the world best famous maker's products to maintain high definition and durability.

Servo Valve



- Rating flow rate : According to actuator 3.8 l ~ 228 l
- Working pressure : 210 bar, 350 bar
- Natural point shift : in 2%
- MOOG (USA)

Accelerometer



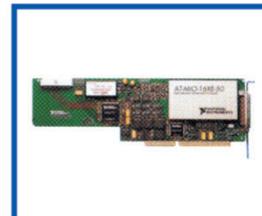
- Piazo electronic Type
- Frequency : 3000Hz
- PCB (USA)

Stroke Detector



- Non-Contact Stroke Detector
- Measuring range : 50mm ~ 500mm
- Anti-Straight : ± 0.05%
- Repeatability : ± 0.001%
- Reactivity : 5KHz
- Extreme condition : 1P67
- Working pressure : 350bar
- SANTEST (Japan)

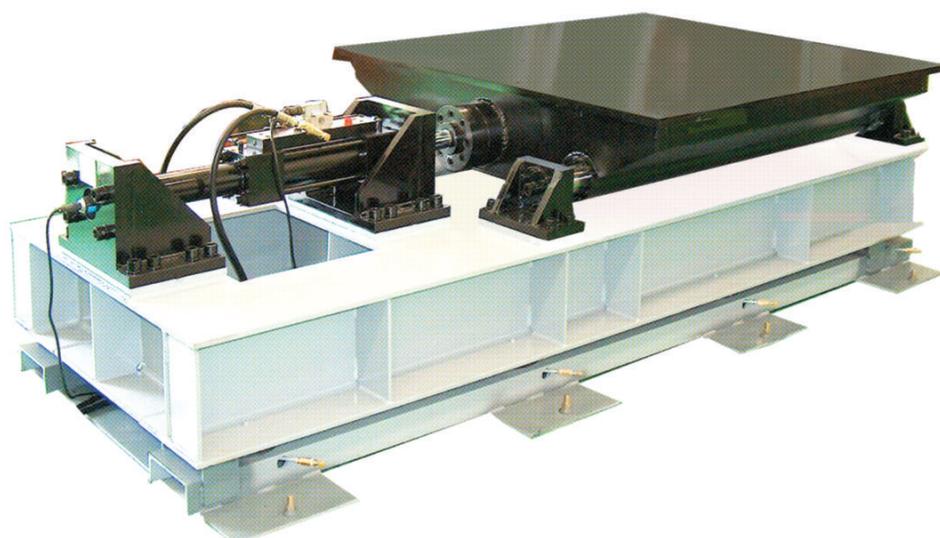
Transducer



- 16Channel, 16bit Resolution
- Analog output : 2Channel
- Digital I/O : 8TTL line
- Counter/Timer : 2up/down, 24bit
- 2up/down, 24bit
- Response : 20KHz
- NI(USA)

## Specifications

Model	STC-V101	STC-V102	STC-V103
Dynamic Force(tonf)	2	5	15
Stroke(mm)	±100	±100	±150
Table Size(mm)	1000×1000	1500×1500	2000×2000
Max Acceleration(G)	1	1	1
Hydraulic Pump(L/Min)	STC-P3(57)	STC-P4(120)	STC-P6(228)
Max Load Force(tonf)	1	2.5	7
Servo Valve	Moog 63 l/min	Moog 63 l/min×2	Moog 228 l/min
Stroke Detector	Non-contact Type ±100mm	Same as left	±100mm
Acceleration meter	PCB 1G	Same as left	Same as left
Control & Data Acquisition program	1) SVR Random & Vibration program 2) SACT Actuator Control program 3) SAS Data aquisition program	Same as left	Same as left
Controller STC-500	1) 32bit DSP loaded 2) Closed loop PID Control 3) PID loop rate : 5KHz 4) Acceleration, Displacement Control 5) Control Frequency : 0.001–1000Hz 6) Hydraulic Servo valve control	Same as left	Same as left
PC	1) Pentium4– Above 2 G 2) Hard disk– Above 2GB 3) 17' Standard Monitor	Same as left	Same as left
Option	1) 19" Rack 2) STC-16NB Dynamic Strain Meter	Same as left	Same as left



# Elastomeric Bearing Testing Machine



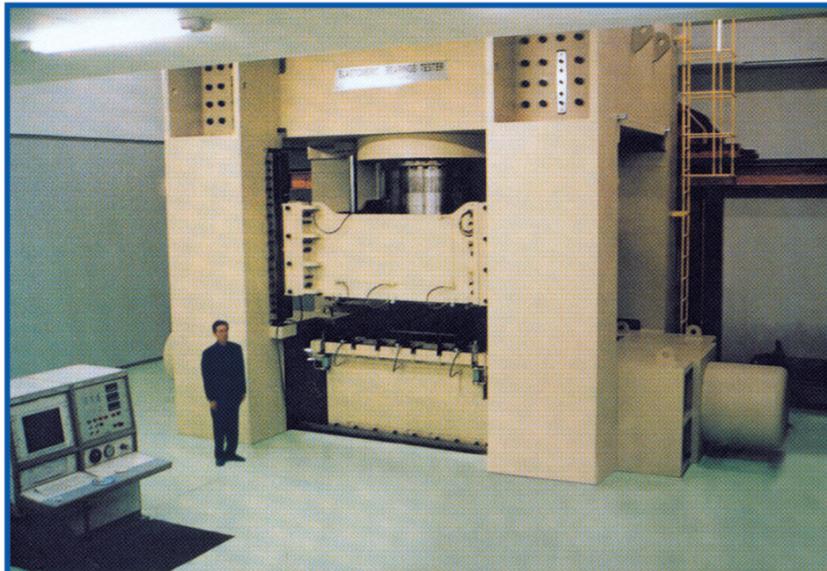
## Elastomeric Bearing Testing Machine

### Elastomeric Bearing Testing Machine

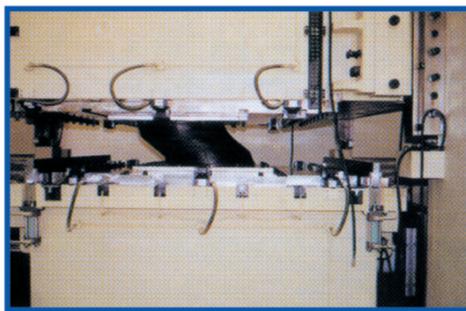
STC-EBT 3000/1000 is the largest tester in Korea.  
This machine is bridge seat elastic gum and vibration isolation tester.  
It can test 3000Ton at normal load and 1000 Ton at horizontal load.

Elastomeric Bearing Testing Machine is manufactured only Japan or Germany's 3-4 companies in the world.  
It is only for elastomeric tester software and it performs automatic testing.

STC-EBT 3000/1000 Testing Machine keeps up with foreign famous Maker products at total performance such as precision and data reproducibility



STC-EBT 3000/1000



DRI

### Elastomeric Bearing

#### ■ Out Line

- 면진고무 : Static rigidity, Horizontal rigidity, Attenuation performance.
- Elastomeric Bearing : Compression rigidity, Shear modulus, Shear splitting
- Test equipment which outputs by KS standard foam through performing these above tests automatically and Analysis Data

# Triaxial Elastomeric Bearing Testing Machine

## Specifications

- Loading frame 1 set
  - Max Loading : Vertical Loading 3000tonf · Horizontal Loading :  $\pm 1000$ tonf
  - Size : about 12000(W)  $\times$  3500(D)  $\times$  8000(H)mm
  - Real Size of specimen : 2000(W)  $\times$  2000(D)  $\times$  1000(H)mm
  - Vertical & Horizontal two axles tester
  - Max Size : 1200(W)  $\times$  1200(D)  $\times$  400(T) 1500 $\phi$   $\times$  400(t)mm
- Vertical Actuator 1set
  - Max Capacity : 3000tonf · Stroke : 800mm · Max Speed : 260mm/min
  - Precision :  $\pm 0.5\%$  · Electronic precision pressure gauge (350kg/cm<sup>2</sup>)
  - Stroke accretion: 500mm ( SANTEST-Japan )
  - Servo Valve—Moog 072Type(228 l /min)—USA · Swivel Head & Base (1set)
- Horizontal Actuator 1set
  - Max Capacity :  $\pm 1000$ tonf · a two way—tensile & compression —2 rod
  - Stroke :  $\pm 800$ mm · Max speed : 600mm/min · Precision : in  $\pm 0.5\%$
  - Load cell—100tonf · Stroke detection : 600mm ( SANTEST-Japan )
  - Servo Valve—Moog 072Type(228 l /min)—USA · Swivel Head & Base (1set)
- Hydraulic Unit 1set
  - Working Pressure : 350kg/cm<sup>2</sup> · Discharge Rate : 228 l /min
  - Motor Capacity : 55kW  $\times$  2ea · Cooling Rate : 200 l
  - PALL Filter System— High Temperature—6μm/ low Temp. —10μm/Air Filter—6μm
- a great difference 1set for facilities installation
  - Controlled by Hydraulic Cylinder · Rail accretion · Portable Crane device accretion
- 1set of specimen change all accessories
- Precise displacement meter for measuring precise displacement measurement LVDT (Precision : up to 0.05%) -4ea

## 3 axial

- Triaxial Dynamic tester which control 2 vertical actuators and 1 Horizontal actuators at the same time
- It has tested 200 million times repeatedly.



- Loading Frame : 200tonf
- Hydraulic Unit(STC-P7)
- Pressure : 250kg/cm<sup>2</sup>
- Oil tank : 1200 l



	Plumb performance (pressure fatigue tester)	Horizontality performance (shearing test)	Plumb moment
Max Load	200tonf	75tonf	20tonf
Max displacement	300tonf	600tonf	20tonf
Max Speed	64mm/sec	100mm/sec	200mm/sec

# Elastomeric Bearing Testing Machine



## I PAD Test Program

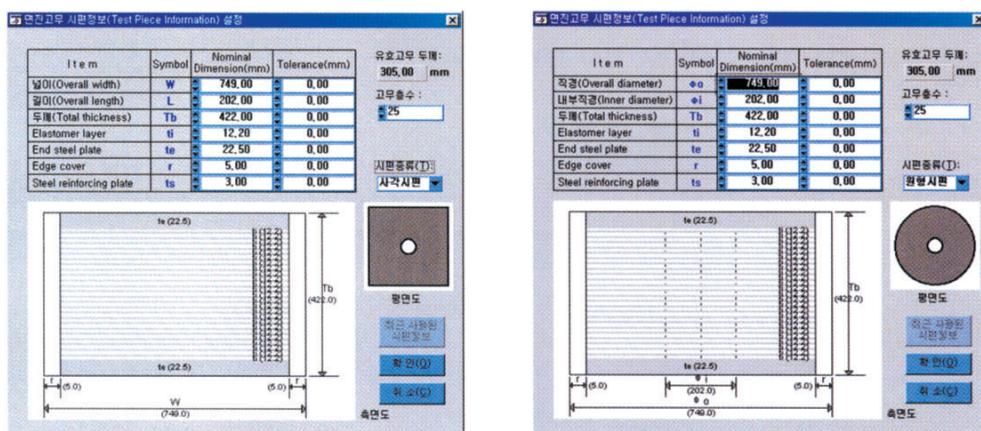
### IPAD TEST

#### I PAD Test Program

- I PAD Test Program automatic program which perform vibration test on rubber, elastic pad, bearing and all kind of rubber allied products.

#### Setting Mode

##### Information of specimen



#### Set up of testing condition





## IPAD Test Program

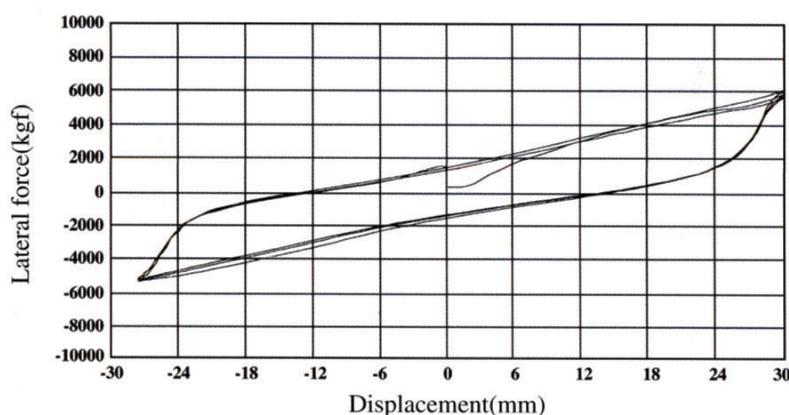
### Report

Customer		Dimension		
Product maker		Tester	Date	

Dynamic test type I

- Testing Speed : 2360.0 mm/min
- Testing Temperature : 21.0°C
- Size of Specimen
- Tested Cycle number of test Specimens : each 3 cycle at specified displacement
- Number of layer : 8
- Nominal thickness of an elastomer layer : 2.0mm
- Total initial thickness of elatstomer( $T_0$ ) : 42mm
- vertical Load : 21670kgf
- Design Displacement( $V_d, x$ )

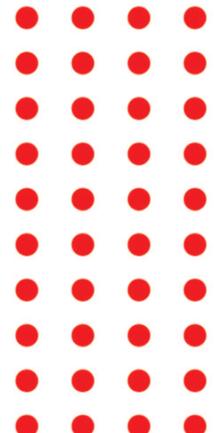
Model	Symbol	Test	STC-V103
Horizontal Displacement(mm)	$V_{max,x}$	29.99	
	$-V_{ax,x}$	-27.68	
Horizontal Force(kg f)	$f_{max,x}$	6144.7	
	$-f_{max,x}$	-5331.4	
Horizontal stiffness (kg f/mm) (1st cycle)	$K_1, x$	99.52	
Horizontal stiffness (kg f/mm) (3rd cycle)	$K_3, x$	94.69	$k_{eff, x} = \frac{(F_{max, x} - (-F_{max, x})) / 2}{V_{max, x} - (-V_{max, x})}$
Effective stiffness (kg f/mm)	$K_{eff, x}$	94.69	
Shear Modulus(kg/cm <sup>3</sup> )	$G_d$	22.50	$\frac{(F_{max, x} - (-F_{max, x})) \times T_0}{2A' \times (V_{max, x} - (-V_{max, x}))}$
Area of histerisis curve(kg/cm <sup>3</sup> )	$A$	157621.1	$\frac{A}{2\pi k_{eff, x} \times V_p, x^2} \times 100$
Equivalent damping(%)	$\beta$	29.46	
Inspection of Isolation edge	-	No crack, No bond failure	No crack, No bond failure







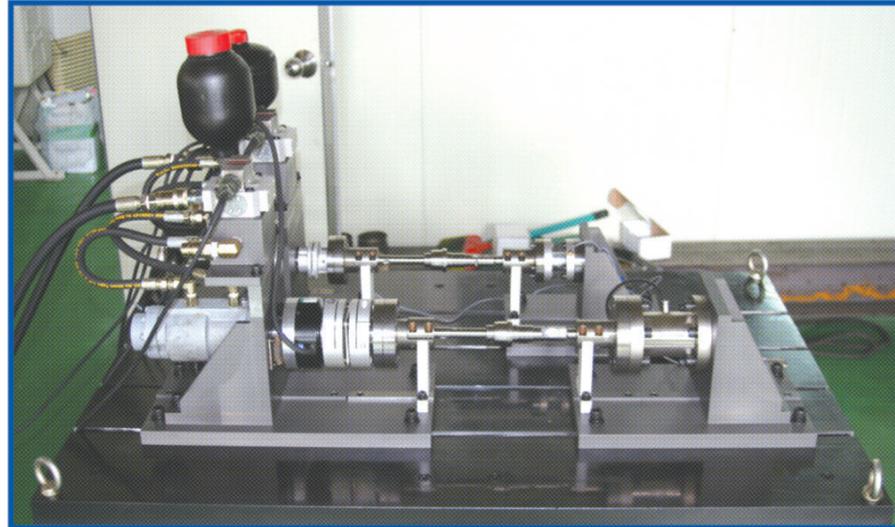
# Vehicle Testing Machine



# Quill Shaft Endurance Tester



## Quill Shaft Endurance Tester

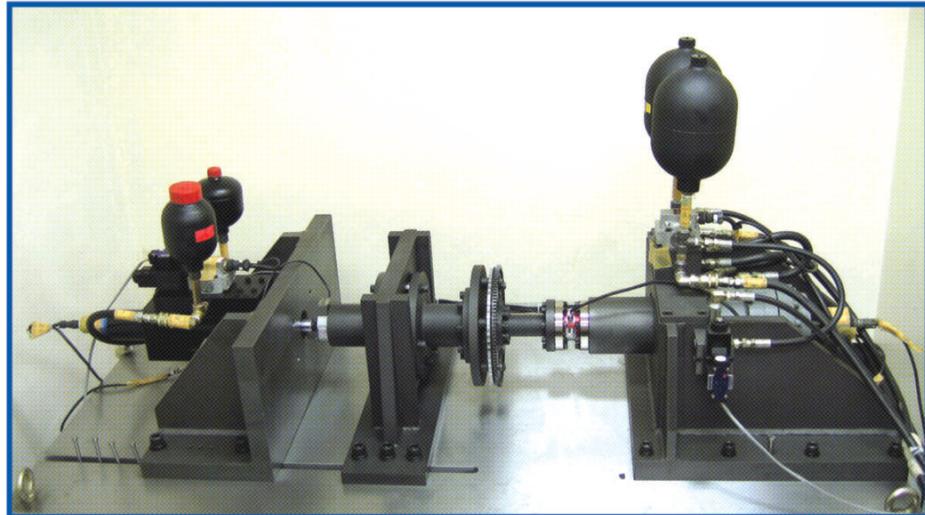


- Hydraulic Servo 2 Axial Shaft and pulley endurance test
  - Axial & Torsional Actuator
  - High Frequency test (30Hz) and Quill Rate static test
  
- System Consist
  - Main unit (Test Bench & Jig set)
  - Linear Actuator (Load cell, LVDT)
  - Rotary Actuator (Torque Sensor, ADT)
  - Hydraulic power Supply (19 l /min)
  - Hydraulic Servo Controller with Data Acquisition system
  - (STC-500 Controller PCI card, Pentium IV PC System, SACT System )
  - Accumulator (2 l x 2set)
  - Separated and Variable specimen fixing Jig sets

# Flywheel Endurance Tester



## Flywheel Endurance Tester



- Hydraulic Servo Control
  - Fatigue Test with 2 Actuator (Axial & Torsional)
  - High Frequency test (40Hz)
  - Long Cycle test

- System Consist
  - Main unit (Test Bench & Jig set)
  - Axial Linear Actuator
  - Torsional (Rotary) Actuator
  - Hydraulic power unit
  - Hydraulic Servo Control with Data Acquisition system



## Specification

Model	STC-RL10	
Actuator	Axial(Linear) Actuator	Torsional (Rotary) Actuator
Max. Load (Torque)	10kN	10kN. M
Stroke (Angle)	50mm	360°
Load Cell (Torque Sensor)	10kN, 0.1%	10kN. M
LVDT	50mm, 0.05%	0.1%
Servo valve	Moog 63 l /min	Moog 63 l/min
Test Frequency	40Hz	40Hz
Hydraulic power unit	STC-P1 19 l at 100 bar	Filter & Cooling unit
Accumulator	2 l	
Main Frame unit(Bench & Jig set)	STC-500 Controller	
Digital Servo Controller With Data Acquisition	N.I 16bit PCI Card, Pentium IV, PC System	SACT Opera & Data Acquisition program

# Hydraulic High Speed Crash Tester



## Hydraulic High Speed Tester



1. Co-developed with KAIST CSMD Lab
2. Impact Energy : 20,000~30,000 Jule
3. Cylinder Speed: Up to 20 m/s
4. Dimension :10(L)×1.4(W)×1.5(H)m
5. Consist of
  - Tester Main Unit
  - High Speed Hydraulic Cylinder, Impact Load cell, Stroke Detector
  - Servo valve(4000 l /min) Accumulator(20 l , 4set)
  - Impact Energy Absorber
  - Controller, Operating and Data Acquisition Program



# Foot Well Tester



## System

- Hydraulic High speed Linear Actuator and Angle Actuator
  - Servo Control and Open loop Control
  - Test speed: 12m/sec

## Specification

Item.		STC-RL10
Linear	Load	Static : 2.5 ton Dynamic : 3.0 ton
	Stroke	Min. 200mm
	Speed	0~12m/sec
	Control of Speed	Velocity Control, Displacement Control, Open-loop Control, Servo Control
	Interior Impact 'g'	Max. 50g
Angular	Load	Static : 1.6 ton Dynamic : 2.0 ton
	Stroke	30~95degree in rotation movement
	Speed	0~12m/sec
	Control of Speed	Velocity Control, Displacement Control
	Interior Impact 'g'	Max. 50g
Accumulator	Accumulator	20 l × 4ea
	Servo Valve	1500 l × 2ea
Control System	1. Positioning : Manual & Automaticaly	
	2. Method of Input Order : Internal & External Signal input	
	3. Monitoring before test : Control limit data for variable input data	
	4. Storage of Data : ASCII fine	
	5. Print : Displacement, Angle, Speed vs time in each channels	
Controller	1. STC-500 Servo & Open-loop Control	
	2. High speed data Acquisition PCI card	
	3. SACT control & Data Acquisition program	
	4. Pentium IV PC system	

# High Rate Strain Tester



## High Rate Strain Tester

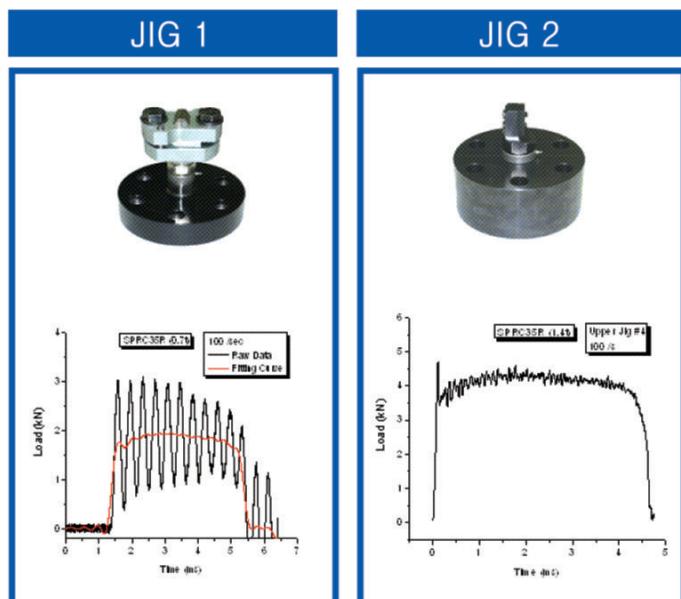
1. Co-developed with KAIST CSMD Lab
2. 32bit 150MHz, DSP Digital servo control
3. 5MS/S N.1 Date Acquisition Card
4. Moog 3stage Large capacity Servo value with Accumulator



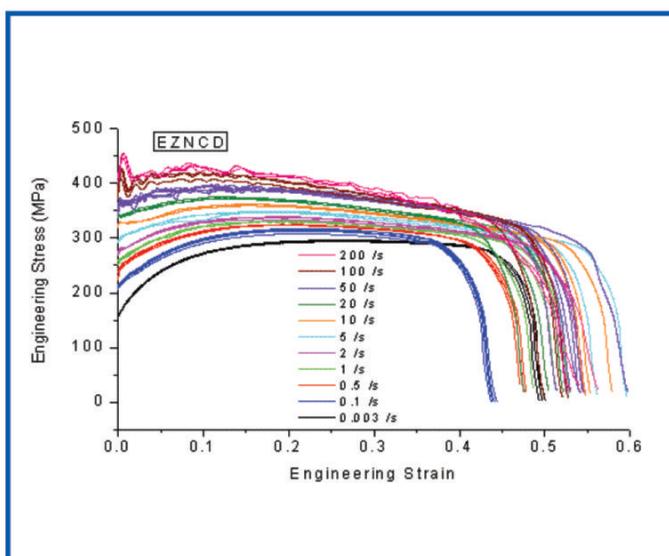
## JIG

- Hydraulic High speed Linear Actuator
  - Servo Control and Open loop Control
  - Test speed: Up to 25m/sec

- Test frequency up grade (2,700Hz to 12,500Hz)



- Stress-Strain Curves



# High Rate Strain Tester



## System advantage

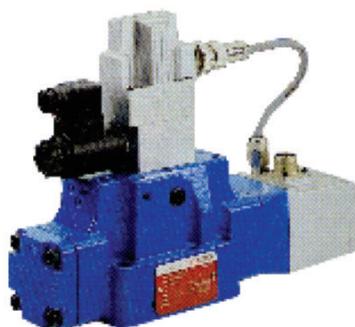
### Specification

Item.	STC- ht700	STC- ht1500	STC-ht2000	STC-ht2500
Max. testing speed	7m/sec	15m/sec	20m/sec	25m/sec
Max. load	30KN, 65KN, 100KN			
Piezo electric load cell	90KN, 150KN, 400KN			
Servo valve	moog, 500~3000l/min, fast response type			
Dynamic actuator	hydrostatic bearing, anti shocking, double acting type-load: 45kN,100kN,150kN stroke: 300mm			
LVDT	high frequency(8KHz~1MHz), 300mm, 0.001%			
loading frame	high stiffness, cross head moved by hydraulic lift cylinder approx. size: 2,300~2,500(h)mm,1000(w) × 600(d)mm			
Hydraulic pumt unit	STC-p3(60l/m), STC-p5(120l/m) built in spressorfor shocking, pulsation noise. 3μm filter unit			
Accumulator	10l, 4l 3~6 pcs : according to model			
Tension jig	anti-shock, anti-vibration digital servo			
Digital servo controller	STC-500, 32 bit 60MHz DSP processor			
Data acquisition unit	n.i. 5ms/s, 4 input channel PCI board pc system, 19inch rack			
Program	SACT ver.2			

Piezoelectric Load cell



Piezoelectric Load cell



Servo valve



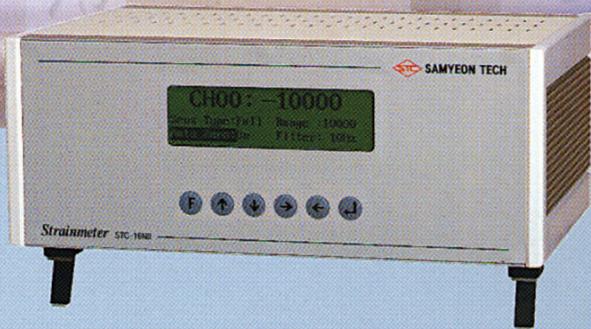
Non-Contact Displacement Transducer



# **STC-16NB**

## *Dynamic strainmeter*

>>> [www.samyeon.co.kr](http://www.samyeon.co.kr)



## Dynamic Strainmeter

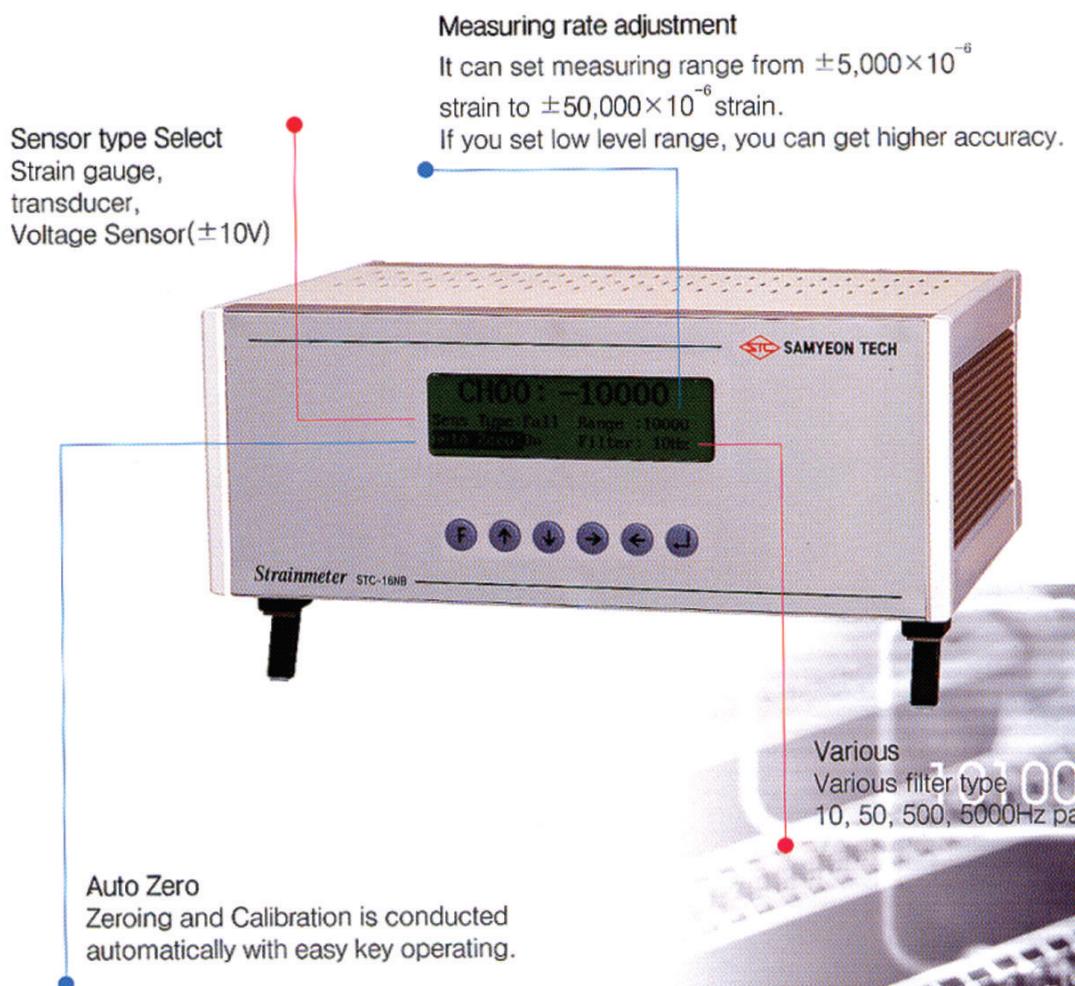
### STC-16NB Dynamic strainmeter

Strain gauge and strain gauge type Sensor(displacement transducer, load cell, pressure gauge and so on) that can be measured in 16 channels and with the use of A/D converter, the data can be processed with a desktop or laptop Computer.

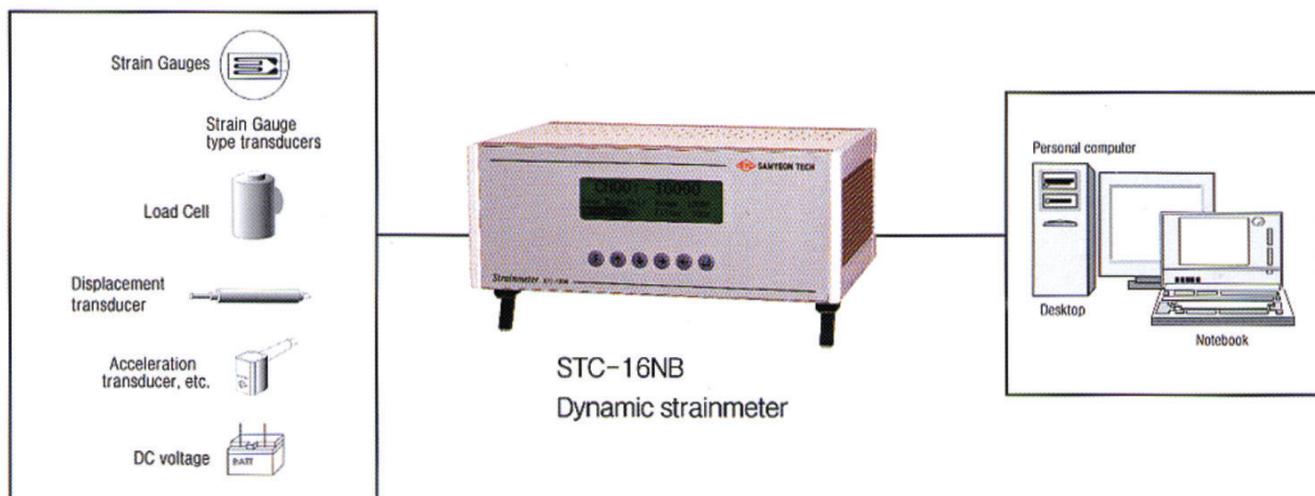
8 Channel are simultaneously Displayed with a 4 level Low-pass filter installed for automatic zeroing.

The windows OS is used to process 64 channels at once, it is equipped with noise eliminator filter, averaging, X-Y, X-T plot and a vibration measuring functions by FFT method.

### Easy to use system by keypad operation



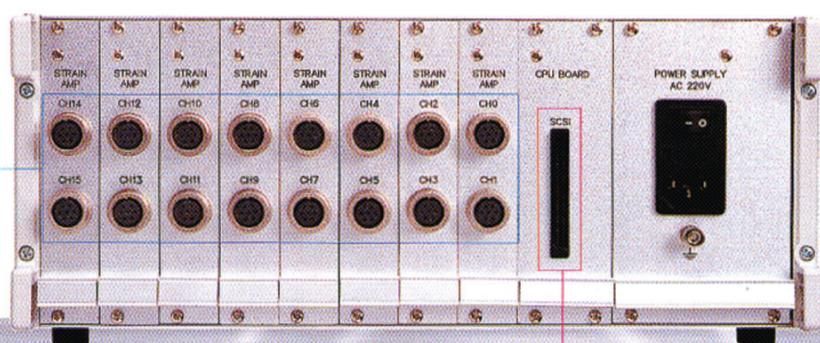
## Layout



## Easy connecting with PC by SCSI interface

Small size and light weight.  
434(W) × 250(D) × 185(H) mm, 6kg

Sensor input  
Connector



It is supported with a National Instrument 16bit A/D converter  
for use on PC to easily get data and ease of use with software.

STC-16NB Dynamic  
Strainmeter

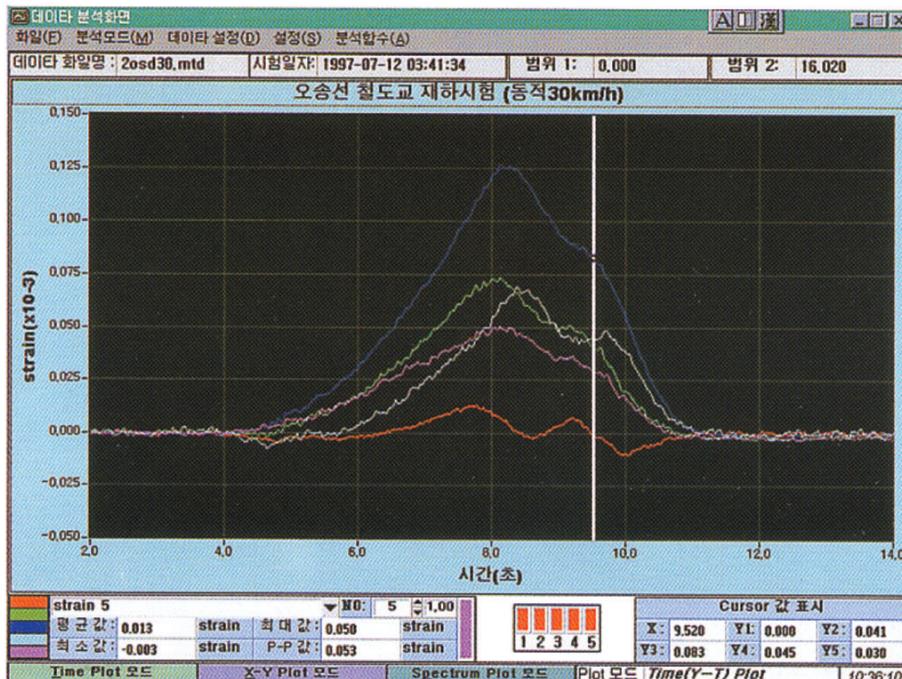
STC-16NB Dynamic strainmeter

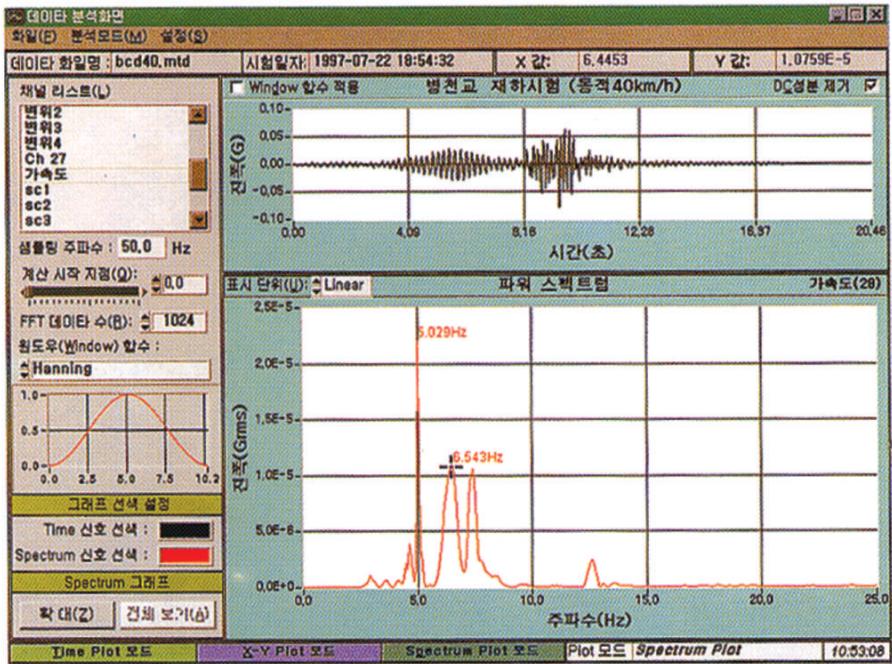
# SAS, Strain

## Analysis Software.

### Usable Various Function

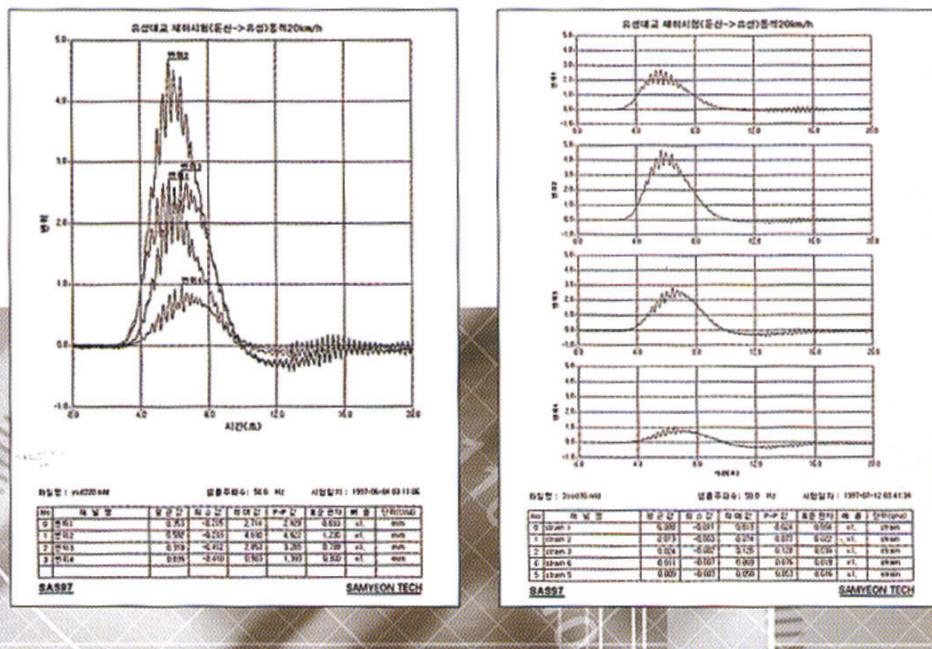
- The software display full status of current system by simple operating
- All data is stored in PC memory and analyzed with database for reporting
- The stored data or graph is interfaced with other general software(MS Excel, Office etc)easily
- The software is made with general Pentium grade P.C and Windows OS for interchange the data to other system and easy maintenance and repair
- The software is made for operator can plan the test schedule in CRT screen with graph or table and can determine the full test status, alram function, Interval of data acquisition, color of graph, storage method of data, data monitoring method
- The program architecture should have following function. Control menu, Data Acquisition menu, File menu, Help menu and Data analysis menu.





- Measuring Speed : 0.1 ~ 6,250 point per second
- Menu-drive System for IBM PC
- Display, data acquisition, data store and print
- Up to 64 channels measuring
- Can be data store during display at real time
- 8 channel Y-T plot in one monitor by different color
- Multi X-Y plot, spectrum plot by FFT method.
- Average, Min, Max, P-P, STD Value display
- The Measured values are appear digitally when the crossbar touch line of X-Y and Y-T plot

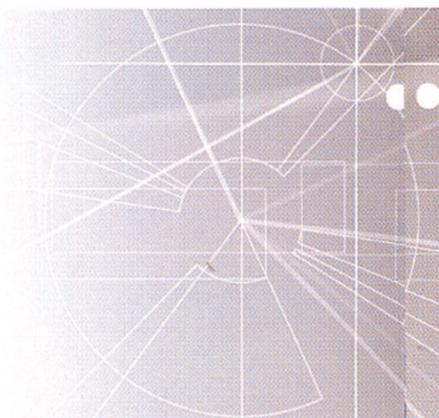
- Zoom function
- Multi Axis function : up to 5 different Y Axis range in same graph by auto range
- Can be store ASCII file
- Calculation function :  $y = ax + b$
- Channel Name, Average, Max, Min, P-P and STD Value are listed up Channel
- Measuring time setting : 1 to 999,999 second
- Digital filtering function
- Statistics function
- For Windows OS



STC-16NB Dynamic strainmeter

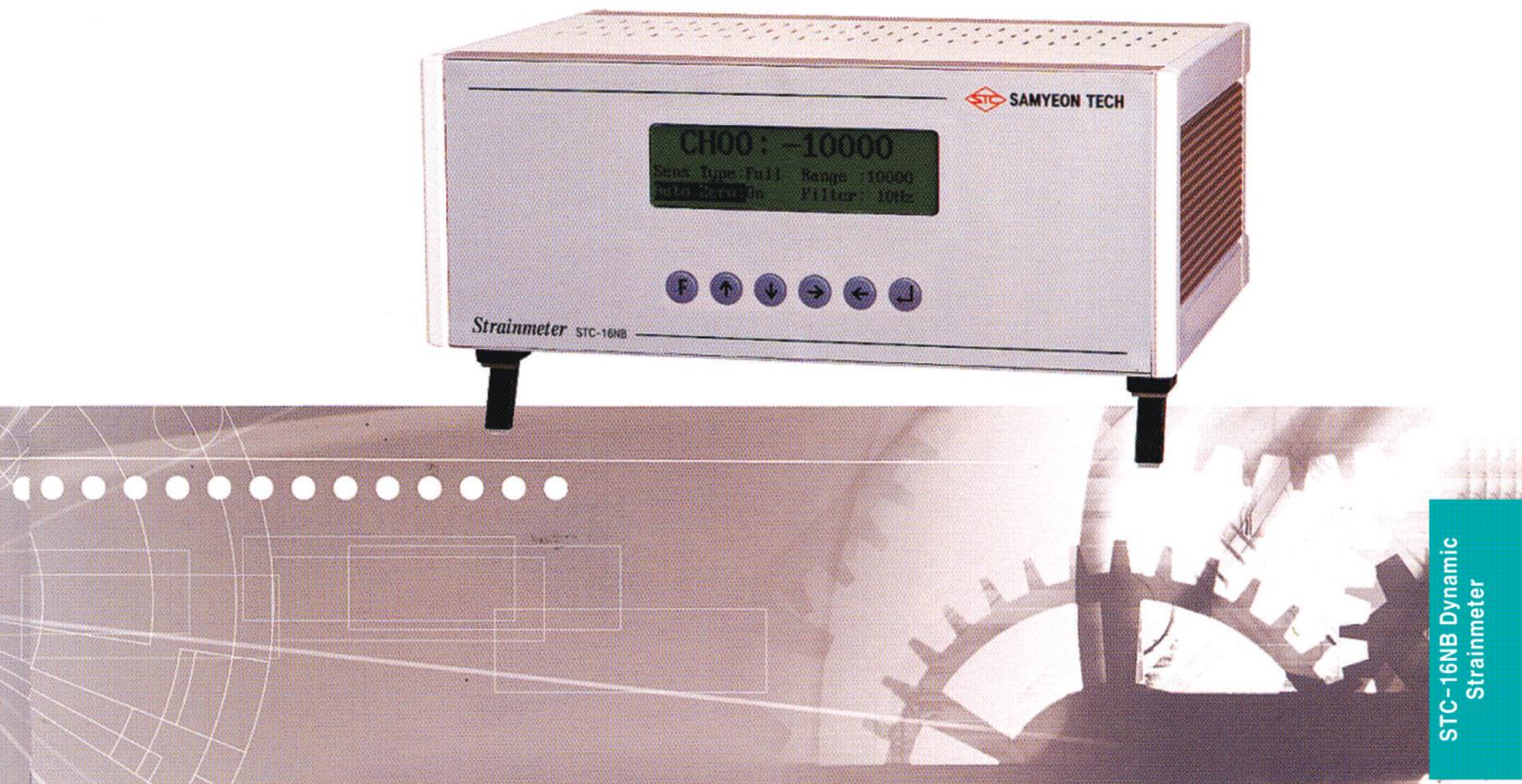
# Specification

- For measuring strain gauge, strain gauge transducer, DC Voltage
- Number of measuring points : 16 Channel
- Applicable gauge resistance : 60 - 1000 $\Omega$
- Input range : 0.100 - 10,000 mV/V,  
    0.001 mV step
- Bridge excitation :  $\pm 1V$
- Balancing method :
  - Electronic automatic
  - Balancing time : Approx. 2 second
  - Manual setting by electronic key or manual key in case of need
- Balancing accuracy :  $\pm 2 \times 10^{-6}$  strain
- Measuring range : 5,000, 10,000, 25,000, 50,000  $\times 10^{-6}$  strain
- Output :  $\pm 4V(\pm 20mA)$
- Frequency response : DC-50kHz
- Low-pass filter : 10, 50, 500, 5,000Hz, pass
- Stability
  - On Zero :  $\pm 2 \times 10^{-6}$  strain
  - Temperature :  $\pm 0.05\%/\text{ }^{\circ}\text{C}$
- Display
  - Display method : Bargraphic LCD Monitor
  - Resolution :  $240 \times 64$  Dot
  - Contents : 8 Measuring Channels in displayed at the same time.
  - Monitor size :  $132.0 \times 39.0$  mm
- Internal Switch Box(120 ohmn) for strain gauge
- Input terminal : 7 Pin Round NDIS Jack
- Measuring Accuracy :  $\pm 0.2\%$  FS(noise influence not included)



# STC-16NB Dynamic strainmeter

- 16bit N.I PCMCIA Card
  - Analog input
    - 16 single-ended, 8 differential channels
    - 16-bit resolution
    - 200 kS/s single channel sampling rate
    - 20 kS/s multiple channel sampling rate
    - Channel-independent gains and ranger
    - Software calibration
  - Digital I/O : 8 TTL lines
  - Counter/Timers
    - 2 up/down, 24-bit resolution
    - 20 MHz maximum source frequency
  - Triggering
    - Digital
    - 10 PFI lines
- SAS97 Data Aquisition Program
- Temperature range : 0~ 50°C
- Power : 220V, 60Hz
- Dimension and Weight : 434(D)×250(D)×185(H)mm, 6kg
- Standard accessories :
  - Main Unit Operating Manual
  - SAS97 Programe Manual
  - AC Power Cable
- Optional accessory :
  - Input Sensor Cable attached NDIS Jack(10m)

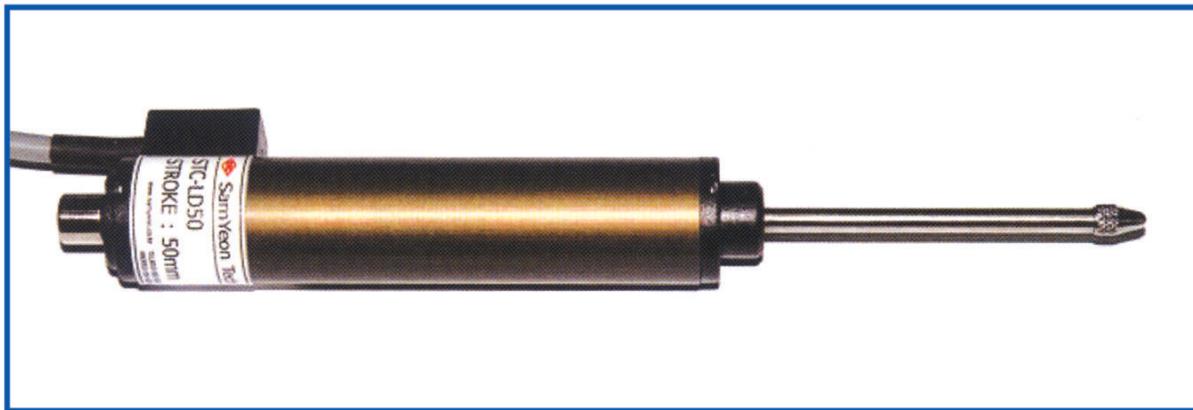


STC-16NB Dynamic strainmeter

STC-16NB Dynamic  
Strainmeter

# Model STC-LD Series

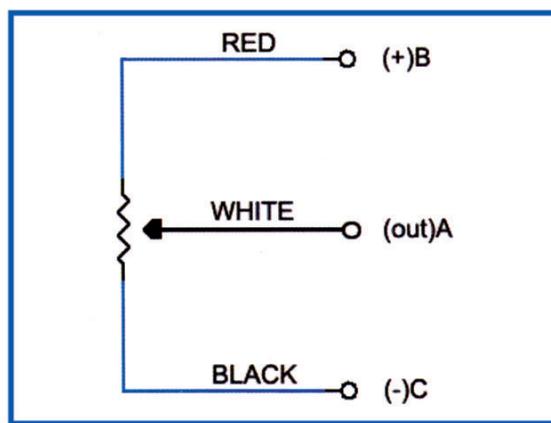
## Linear Potentionmeter (5mm ~ 100mm)



### Specifications

Model	STC-OE 100	
Rated Capacity	10, 30, 50mm	100mm
Non-Linearity	$\pm 0.2\%$ F.S	$\pm 0.4\%$ F.S
Hysteresis	$\pm 0.05\%$ F.S	$\pm 0.1\%$ F.S
Non-repeatable	$\pm 0.05\%$ F.S	$\pm 0.1\%$ F.S
Total Resistance( $\pm 20\%$ )	2k $\Omega$ (stroke 5~10mm) 5k $\Omega$ (stroke 30~100mm)	
Temperature range compensated	-10°C ~ 70°C	
Temperature range safe	0°C ~ 60°C	
Excitation Voltage	10V DC	
Cable	$\phi 4$ Shield 2m	

### Circuit Diagram



# Memo

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