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I. Wiring



- 1. Strain Gage : 3 wire connection
- 2. 4Gage : Cables of bridge type sensor as like load cell and pressure transducer, acceleration transducer and torque transducer, etc, shall be connected with each ports of EXC+,SIG+,EXC-,SIG-,GND.
- 3. Potentiometer : For potentiometer type sensor(POT), refer to LVDT wiring in the above picture.
- 4. Voltage : Voltage output type sensors shall be connected with voltage signal port (± 10 Volt). Thermocouple(J,K,T,E,R,S type)

II. Sequence of Installation

- 1. Run CDM_Setup.exe program in CD for installation of USB drive.
- 2. Run multiscan_setup.exe program for installation of measurement program.
- 3. Connect cable of USB.
- 4. Turn on power of data logger. LED(ST1) of the front side blinks.
- 5. Click on Multiscan icon.

II. Initial Setup Screen

- 1. Setup file: Check setup file. (Available to save or load for all environments setup as like sensor setup, graph setup)
 - * Load Set : Load saved setup file
 - * Save Set : Save setup file to "save as"
- 2. Sensor Setup : Set each channels to meet sensor type.
- 3. Save Setup : Set save interval of static mode or dynamic mode.
- 4. Environment Setup : Set Environment
- 5. Static Mode : Run it at the static test. Static test can be measured10points/sec(each channel).
- 6. Dynamic Mode : Run it at the dynamic test. Dynamic test can be measured 200points/sec(2000Hz).
- 7. Cycle Mode : Run cycle mode for fatigue test or endurance test.
- 8. Program Exit : Exit program.

hannel Setup																		
CH SELECT (* CH 1 ~ 32 C E1,CH 1 ~ 16 C E2,CH 1 ~ 16 C E3,CH 1 ~ 16 C E4,CH 1 ~ 16 Detailog Setue													Setup					
Chan	Infomation	Status	Sensor type	Dec.poi	nt	Unit		Mode		Capacity	R.0 (mv/v)	G.F	Graph Axis		L.P.Filter	Adj.A	Adj.B	-
01	CH 1	🗶 ON	4Gage (Sensor) *	000.00	-	tf	-	Measure	٠	50	2		Load	-	10Hz •	1	0	
02	CH 2	🗶 ON	4Gage (Sensor) 💌	000.00	•	tf	•	Measure	٠	50	2		Load	•	10Hz •	1	0	
03	CH 3	🗶 ON	4Gage (Sensor) 💌	000.00	٠	tf	•	Measure	٠	50	2		Load	•	10Hz -	1	0	
04	CH 4	🗶 ON	4Gage (Sensor) 💌	000.00	٠	tf	•	Measure	٠	50	2		Load	•	10Hz 💌	1	0	
05	CH 5	🗶 ON	4Gage (Sensor) 💌	000.00	•	tf -	•	Measure	•	50	2		Load	•	10Hz -	1	0	
06	CH 6	🗶 ON	4Gage (Sensor) 💌	000.00	٠	tf -	-	Measure	٠	50	2		Load	•	10Hz -	1	0	
07	CH 7	🗶 ON	4Gage (Sensor) 💌	000.00	٠	tf	•	Measure	٠	50	2		Load	•	10Hz 💌	1	0	
80	CH 8	🗶 ON	4Gage (Sensor) 💌	000.00	٠	tf -	•	Measure	٠	50	2		Load	•	10Hz -	1	0	
09	CH 9	🗶 ON	1Gage 1200 💌	00000.	٠	uSt	•	Measure	٠			2	Strain	•	10Hz •	1	0	
10	CH 10	🗶 ON	1Gage 1200 💌	00000.	٠	uSt	-	Measure	•			2	Strain	•	10Hz 💌	1	0	
11	CH 11	🗶 ON	1Gage 1200 -	00000.	•	uSt	-	Measure	٠			2	Strain	•	10Hz -	1	0	
12	CH 12	🔀 ON	1Gage 1200 💌	00000.	٠	uSt	-	Measure	٠			2	Strain	•	10Hz •	1	0	
13	CH 13	🗶 ON	1Gage 1200 🔹	00000.	•	uSt	•	Measure	•			2	Strain	•	10Hz -	1	0	
14	CH 14	🗶 ON	1Gage 1200 💌	00000.	•	uSt	-	Measure	٠			2	Strain	•	10Hz •	1	0	
15	CH 15	🗶 ON	1Gage 1200 💌	00000.	٠	uSt	-	Measure	٠			2	Strain	•	10Hz 💌	1	0	
16	CH 16	🗶 ON	1Gage 1200 •	00000.	•	uSt	-	Measure	*			2	Strain	•	10Hz -	1	0	-
	Group Set Graph Channel Select Save & Exit																	

IV. Sensor Setup

Strain Data Logger [Multiscan Ver 3.7.8]	2 · · · · · · · · · · · · · · · · · · ·
Setup File Setup File : C:WdataWsetupWdatalog.cfg Load Set Save Set	
Sensor Setup	Static Mode
Save Setup	Dynamic Mode
Environment Setup	Cycle Mode
	Program Exit

- 1). Chan : Setup channel No.
- 2). Information : Input channel information.
- 3). Status : Set ON or OFF , if check ON, the checked channel start measurement.
- 4). Sensor type :
 - * 1Gage 120 => Select for measurement of 120ohm one gage.
 - * 1Gage 350 => Select for measurement of 350ohm one gage.
 - * 4Gage(strain) => Select for 4 strain gage type sensor as like load cell, pressure transducer, displacement transducer and acceleration transducer. (display as strain, gage factor setup)
 - * 4Gage(sensor) => Select for 4 strain gage type sensor as like load cell, pressure transducer, displacement transducer and acceleration transducer. (rated output or gage factor setup)
 - * Lvdt(pot.) => Select for potentiometer type displacement sensor.
 - * Volt => Select input signal from amplifier (±10Volt)
- 5). Dec. point : Select decimal point.
- 6). Unit : Select unit. It is available to direct typing.
- 7). Mode : Select automatic zero.
 - * If select mode of "Measure", the value is changed to zero at the moment of selection.
 - * If select mode of "Direct", the value is not changed.
- 8). Capacity , R.O (Rated output, mv/v) , G.F
 - * Strain gage : G.F (gagae factor) shall be inputted for measurement of strain gage.
 - * 4gage type sensors : Capacity and Rated output shall be inputted for measurement of 4 gage type sensors by mV/V. Refer data sheet of sensor.
 - * Pot(potentiometer type) : Capacity and rated output of sensors shall be inputted for measurement of potentiometer type sensors. Generally, R.O of potentiometers is 1 but some potentiometers which have dead zone, is less 1. Refer data sheet of sensor.
 - * Volt type sensor : Capacity of sensor at the 10 V shall be inputted. As an example, if data sheet of load cell show that capacity is 10,000kg at the 10V output, input 10,000 in capacity.
- 9). Graph Axis : Select value of Y axis for display as graph.
- 10). L.P filter : Set low pass filter
 - * Select one in 10Hz, 100Hz, 1Khz, 10Khz.
 - * Operator shall 2times frequency filter higher than test frequency.
 - * As an example, operator will perform less 5Hz fatigue test, shall input 10Hz.
 - * If operator find noise due to high filter, shall connect system with ground.
 - * Terminal of ground connection is installed at the back side and aside of power of system.
- 11). D/A : This function is analog output setup for module which has analog output function(option).
 - * Operator shall input capacity at the 10V.

- * If capacity of load cell is ± 100 kg at the ± 10 V, operator input 100 to D/A.
- \ast If operator input 10, 10Kg is outputted at the $\pm 10V.$
- 12). Adj.A , Adj, B : This function is used to calibrate output of sensor.
- *Measure = measure X A + B (Generally A=1, B=0)
- *If operator input 0 to the "A", measure is 0.
 - So operator sets it with care.

1. Group Setup : Set other channels setup as same with base channel.

Group Setup

Ba	ase Channel CH 9	•	Qk
		II.	Cancel
IF CH 17	E1,CH 1 FE2,CH 1	IT E3,CH 1 I	" E4.CH 17
IF CH 18	E1.CH 2 T E2.CH 2	F E3.CH 2 F	T E4.CH 18
🖓 CH 19 👘	E1.CH 3 F E2.CH 3	IT E3,CH 3 I	T E4,CH 19
F CH 20 F	E1.CH 4 T E2,CH 4	IT E3,CH 4 IT	" E4.CH 20
E CH 21 E	EI.CH 5 TE2.CH 5	IT E3,CH 5 IT	" E4.CH 21
IT CH 22 IT	E1,CH 6 T E2,CH 6	T E3,CH 6 T	T E4.CH 22
F CH 23 F	EI.CH 7 TE2.CH 7	IT E3.CH 7	" E4.CH 23
F CH 24 F	EI,CH 8 F E2,CH 8	IT E3.CH 8	" E4.CH 24
F CH 25 F	E1.CH 9 / E2.CH 9	гт езсн 9 г	EACH 25
F CH 26 F	E1,CH 10 / E2,CH 10	FT E3,CH 10 F	" E4.CH 26
F CH 27 F	E1,CH 11 TT E2,CH 11	FT E3,CH 11 F	" E4,CH 27
F CH 28 F	E1,CH 12 T E2,CH 12	T E3,CH 12 T	T E4.CH 28
IT ACC. I	E1,CH 13 T E2,CH 13	IT E3.CH 13 IT	" E4.CH 29
IT ACC, 2	E1,CH 14 " E2,CH 14	FT E3,CH 14 F	" E4.CH 30
IT ACC. 3	E1.CH 15 T E2.CH 15	FT E3,CH 15 F	" E4,CH 31
F ACC. 4	EI.CH 16 T E2.CH 16	FT E3.CH 16	T E4.CH 32
01 I 01			All Check
0# 0n		0n 0# 0	All C

- Ex) No. 10,11,12,13,14,15,16,17,18 and 19 channels are settled as same with No. 9 channel.
- 2. Data Logger Setup
- 1) Strain Gage Range : Set strain gage range.

Datalog Setup	
Strain Gage Range	<u>O</u> k
±10000 (uSt) 💌	<u>C</u> ancel
4Gage (Sensor) EXC, VOLT	⊂ 10V

- 2) 4Gage (sensor) EXC. VOLT : Set output voltage for 4gage type sensor.
- 3. Graph Channel Select : Set channel and cannel numbers to display graph.

Grap	h C	hannel	Sele	et

 4 CH Display 	@ 8 CH Display	 16 CH Display 	C 32 CH Display
	Fix CH	Sel	ect CH
○ CH 1 ~ 32		1~16 C E3.CH 1~16	○ E4.CH 1~16
E1,CH 1			
E1,CH 2			
E1,CH 3			
E1,CH 4			
E1.CH 5			
E1.CH 6			
E1.CH 7			
E1.CH 8			
	,		
		ок	
2) Select CH :	Display selected cannel		
 4 CH Display 	 8 CH Display 	 16 CH Display 	 32 CH Display
	Fix CH	Sel	ect CH
No. 1 CH 1 No. 2 CH 2 CH 3 CH 4 CH 5 No. 4 CH 5 No. 4 CH 6 CH 7 No. 5			
No. 6 CH 6			
No. 6 CH 6 No. 7 CH 7 No. 8 CH 8	3 , ;		
No. 6 CH 6 No. 7 CH 7 No. 8 CH 8			
No. 6 CH 6 No. 7 CH 7 No. 8 CH 8		ОК	

1. Static mode

Save :	Setup										
\square		Static Mode			Dynamin Mode						
	STEP	ON/OFF	Day	Hour	minute	sec	Setup Steps				
	1.	P ON	0	0	0	1.0 ()	○ Conti. ◎ Count 120 ()				
	2.	⊭ ON	(0	00	□]	0.0	Conti. Count 🔲 🕄 🔅				
	3.	⊭ ON	(0	□]	0)	0.0	@ Conti. C Count				
	4.	E ON									
	5.	E ON									
				Qk	<u>c</u>	ancel					
1)	Setur	of save i	nterval in	static m	ode						

- 2). Save interval is classified by 5 steps.
- 3). Select On/Off and input interval (day, hour, minute, sec).
- 4). Select continuous mode or count mode.
- 5). Example of the above screen, data are saved 3600times (one data/sec) for the first one hour and then data are saved 60times (one data/min) for the next one hour and then data saved 5time for the third one hour and then data saved one time /sec continuously. Data can be saved by the minimum 0.1 sec (10 times/sec all channels).
- 2. Dynamic mode

анно автор		
Static Mode	Dynamin Mode save Interval (0.005 ~ 0.2 sec) 0.005 sec (200Hz) ×	Test Time Set Continuous Test time
	<u>Qk</u> <u>Car</u>	



- 1). Setup of save interval in dynamic mode
- 2). Data of all channels in dynamic mode can be measured and saved from 200hz to 5hz.
- 3). If operator select continuous mode in test time, data are saved continuously.
- 4). If operator set test time, data are saved for setting times and stop automatically.
- 5). Operator can stop by button of Stop during measurement.

VI. Setup of Environment

Environment Setup		
영경 설정 C Autozero at Start 또 Keep zero C Free zero	Qk <u>C</u> ancel	
 All Ch Zero ⊂ Select ch zero Graph display interval (for static mode) C Display interval 1.0 €) (sec) at Datasave 		
Graph (for static mode) Graph buffer size 5000 () ♥ Line Point display ♥ X-Axis auto scale		

- 1. Setup of zero
 - * Autozero at Start : Measured value at the start is balanced as zero point automatically.
 - * Keep zero : Keep value of zero point in the last measurement
 - * Free Zero : Start measurement without zero balance.
- 2. All Ch Zero(All channel zero) / Select Ch Zero (Selected channel zero)
 - * If operator selects "All CH Zero", Measurement screen set all channels as zero automatically without confirmation window.

*If operator selects "Select Ch Zero", Confirmation window is opened for zero channel selection.

3. Graph Display Interval (for static mode)

*Display Interval : Set interval of data to display graph.

- *At Datasave : If operator select this button to display graph same with interval of data save
- 4. Graph (for static mode)
 - * Graph buffer size : At the static mode, graph is displayed with buffering by buffer memory. Set 5000 generally, but in case of a highly efficient system can set to 20000 The higher buffer size, the more graph is display.
 - * Line Point Display : Select display of graph points in the static mode.
 - * X-axis Auto scale : Select auto scale of X-axis



VII. Static Mode Test

- 1). After setup of the above step, move to main screen to measure and display data.
- 2). If click menu of "Measure Start", data is recorded and graph is displayed.
- 3). Click "Graph Setup" and set graph ranges.

1. Graph Setup



3. Spread Sheet : Operator can confirm measured values by spread sheet.

🖪 Mul	liscan Static M	Mode 1												×
File(E)	Rle[E] Sensor Setup[S] Graph Setup[G] Measure Start[M] Measure Stop[E] Autozero[Z] TimeGraph[] X-Y Graph(≥)													
►	I 🍃 🛃 🛠		BB	1		TEXT CO)PY					pa	JSe	
elapsi	ed fime 00:01:15								_					
	time(hh:mm:ss)	Elasped time(s)	CHI	CH2	CH3	CH4	0+5	CH6	CH7	CHS	CH9	CHIO	CHI1	-
1	08:56:05	0.0	0	0	0	0.000	0.000	0.000	0.0					_
2	03:56:06	1.0	0	0	0	0.000	0.000	0.000	0.0					
3	08:56:07	2.0	0	0	0	0.000	-0.010	0.000	0.0					
- 4	03:56:08	3.0	0	0	0	-0.010	0.000	0.000	0.0					
5	03:55:09	4.0	0	0	0	0.000	0.000	0.010	0.0					
6	03:56:10	5.0	0	0	0	-0.010	0.000	0.010	0.0					
7	03:56:11	6.0	0	0	0	0.000	0.000	0.010	0.0					
8	08:56:12	7.0	0	0	0	0.000	0.000	0.010	0.0					
9	03:56:13	8.0	0	0	0	0.000	0.000	0.020	0.0					
10	03:56:14	9.0	0	0	0	0.000	0.000	0.020	0.0					
-11	03:56:15	10.0	0	0	2	0.000	0.030	0.090	0.0					
12	03:56:16	11.0	0	0	5	0.0	0.060	0.160	0.0					
13	03:56:17	12.0	0	0	7	0.020	0.090	0.230	0.0					
14	03:55:18	13.0	0	0	10	0.020	0.120	0.310	0.0					
15	03:56:19	14.0	0	0	18	0.040	0.200	0.520	0.0					
16	03:56:20	15.0	0	0	32	0.060	0.310	0.810	0.0					
17	03:56:21	16.0	0	0	56	0.080	0.440	1.160	0.0					
18	03:56:22	17.0	0	0	91	0.110	0.580	1.500	0.0					
19	03:56:23	18.0	0	0	143	0.130	0.690	1.870	0.0					
20	08:56:24	19.0	0	0	183	0.160	0.820	2.180	0.0					
21	03:56:25	20.0	0	0	220	0.180	0.930	2.470	0.0					
22	03:56:26	21.0	0	0	260	0.200	1.020	2.720	0.0					
23	03:56:27	22.0	0	0	287	0.210	1.070	2.860	0.0					
24	03:56:28	23.0	0	0	302	0.220	1.090	2.950	0.0					
25	03:56:29	24.0	0	0	305	0.220	1.100	2,960	0.0					
26	03:56:30	25.0	0	0	306	0.220	1.100	2.970	0.0					
< ²⁷	08:56:31	26.0	0	n	306	0.920	1.100	2 970	n n					Ě
	2008-03-18	오후 3 59												1

4. X-Y Graph : Operator can set graph range in real time.

Multiscan Static mode					
File[E] Sensor Setup[S] Graph Setup[G] Measure Str	HIM Measure Stop[P]	Autozero[Z] Fri	He(E) TimeGraph(])	X-Y Graph[X]	Sheet[S] All-CH[A]
		Graph Copy			
			J		
0	- 100				
		CH 1	0.0 (uSt)	CH 17	0.0 (uSt)
-0,1-	- 90	CH 2	0.0 (uSt)	CH 18	0.0 (uSt)
-0.2-	-80	CH 3	0.0 (uSt)	CH 19	0.0 (uSt)
		CH 4	0.0 (uSt)	CH 20	0.0 (uSt)
-0.3-	- 70	CH 5	0.0 (uSt)	CH 21	0.0 (kgf)
-0.4-	- 60	CH 6	0.0 (uSt)	CH 22	0.0 (uSt)
NO	- <u>8</u>	CH 7	0.0 (uSt)	CH 23	0.0 (uSt)
pr. 0.5-	-50 5	CH 8	0.0 (uSt)	CH 24	0.0 (uSt)
-3-0.6-	-40 5	CH 9	0.0 (uSt)	CH 25	0.0 (uSt)
	·	CH 10	0.0 (uSt)	CH 26	0.0 (uSt)
-0,7-	- 30	CH 11	0.0 (uSt)	CH 27	0.0 (uSt)
-0.8-	-20	CH 12	0.0 (uSt)	CH 28	0.0 (uSt)
	·	CH 13	0.0 (uSt)	CH 29	0.0 (uSt)
-0,3-	- 10	CH 14	0.0 (uSt)	CH 30	0.0 (uSt)
-1	-2.39565e-041	CH 15	0.0 (uSt)	CH 31	0.0 (uSt)
-1 -0.9 -0.8 -0.7 -0.6 -0.5 -0.4 -0.3 -0 Displacement (mm)	1,2 -0,1 0	CH 16	0.0 (uSt)	CH 32	0.0 (uSt)
CH 1 CH	12	_	CH 5		_
					XY Graph Setup
·			•		
(uSt)		(uSt)		LL (uS	Graph Clear
CH 1	레프 범위				-
	X Auto scale X-Axis	max	Y-Axis max	Y2-Axis r	max
	V dote or alla V. A. La	min	W-A-la min	10-A-In-	n in
USt)	Arrent of the Arrent		1-Mus min	T2-9005 1	
0010 02 04 000					
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1) XY graph setup

- * Tile : Input titles of X-axis, Y1-axis, Y2-axis.
- * Plot : Select channel of X-axis and Y-axis.
 - $\label{eq:plot-1} \begin{array}{l} \mbox{Plot-1}: \mbox{Channel}: \mbox{Select channel of graph1}.\\ \mbox{Y-Axis}: \mbox{Select axis of graph1}. \end{array}$
 - Plot-2 : Channel : Select channel of graph2. Y – Axis : Select axis of graph2.
 - Plot-3.4 : Same as the above and if operator select "none", graph is not displayed.
 - Axis-1 is Y1, and Axis-2 is Y2.

Ne					OF .
×a p	splacement (mm)	_		L 200 L
	rad (RN)		_		Cancel
Y2 4 5	tain (uSt)		_		
lot					
X Axis	9Channel	-			
X Axis	[9Channel Channel	-	Y - Axis		
X Axis Plot - 1	Ochannel Channel	•	V - Aodis Andis-1	•	
X Axis Plot - 1 Plot - 2	9Channel Channel 10Channel 11Channel	•	Y - Axis Axis-1 Axis-2	•	
X Axis Plot - 1 Plot - 2 Plot - 3	9Channel Channel 10Channel 11Channel 12Channel	•	Y - Axis Axis-1 Axis-2 Axis-2	•	

2). All-CH : Operator can check values of all channels.

🗏 Multisc	an [S	tatic m	ode 1														
File(E) Se	insor Setu	p[<u>S]</u> (Graph Setup[<u>6</u>] Mea	sure Sta	art[M] Mea	isure Stop)	El Au	tozero[Z]	Free[E]	T	imeGraph(]]	X-Y G	iaph[<u>X]</u> fiqe	Sheet[S]	AII-CH[A	J
	12 💰	3 %	🔤 🗄	BB	B	🖵 🛃											
							-										_
CH 1	0.0	00	CH 17	0.0	(uSt)	E1,CH 1	0.0	(uS0	E2.CH 1	0.0	(kgf)	E3,CH 1	0.0	(mm)	E4.CH 17	0.0	(mm
CH 2	0.0	(1)	CH 18	0.0	(uSt)	E1,CH 2	0.0	(mm)	E2,CH 2	0.0	(kgf)	E3,CH 2	0.0	(mm)	E4.CH 18	0.0	(mm
CH 3	0.0	(11)	CH 19	0.0	(uSt)	E1,CH 3	0.0	(mm)	E2,CH 3	0.0	(kgf)	E3,CH 3	0.0	(mm)	E4,CH 19	0.0	(mm
CH 4	0.0	(11)	CH 20	0.0	(%)	E1,CH 4	0.0	(mm)	E2,CH 4	0.0	(kgf)	E3,CH 4	0.0	(mm)	E4,CH 20	0.0	(mm
CH 5	0.0	(1)	CH 21	0.0	(%)	E1,CH 5	0.0	(mm)	E2,CH 5	0.0	(kgf)	E3,CH 5	0.0	(mm)	E4,CH 21	0.0	(mm
CH 6	0.0	(1)	CH 22	0.0	(%)	E1,CH 6	0.0	(mm)	E2,CH 6	0.0	(kgf)	E3,CH 6	0.0	(mm)	E4,CH 22	0.0	(mm
CH 7	0.0	(9)	CH 23	0.0	(°C)	E1,CH 7	0.0	(mm)	E2,CH 7	0.0	(kgf)	E3.CH 7	0.0	(mm)	E4.CH 23	0.0	(mm
CH 8	0.0	09	CH 24	0.0	(°C)	E1,CH 8	0.0	(mm)	E2.CH 8	0.0	(kgf)	E3.CH 8	0.0	(mm)	E4.CH 24	0.0	(mm
CH 9	0.0	(uSt)	CH 25	0.0	(°C)	E1,CH 9	0.0	(mm)	E2.CH 9	0.0	(kgf)	E3,CH 9	0.0	(mm)	E4.CH 25	0.0	(mm
CH 10	0.0	(uSt)	CH 25	0.0	(°C)	E1,CH 10	0.0	(mm)	E2.CH 10	0.0	(kgf)	E3,CH 10	0.0	(mm)	E4.CH 26	0.0	(mm
CH 11	0.0	(uSt)	CH 27	0.0	(%)	E1,CH 11	0.0	(mm)	E2,CH 11	0.0	(kgf)	E3,CH 11	0.0	(mm)	E4,CH 27	0.0	(mm
CH 12	0.0	(uSt)	CH 28	0.0	(%)	E1,CH 12	0.0	(mm)	E2,CH 12	0.0	(kgf)	E3,CH 12	0.0	(mm)	E4,CH 28	0.0	(mm
CH 13	0.0	(uSt)	ACC, 1	0.0	(%)	E1,CH 13	0.0	(mm)	E2,CH 13	0.0	(kgf)	E3,CH 13	0.0	(mm)	E4,CH 29	0.0	(mm
CH 14	0.0	(uSt)	ACC, 2	0.0	(%)	E1,CH 14	0.0	(mm)	E2,CH 14	0.0	(kgf)	E3,CH 14	0.0	(mm)	E4,CH 30	0.0	(mm
CH 15	0.0	(uSt)	ACC. 3	0.0	(°C)	E1,CH 15	0.0	(mm)	E2.CH 15	0.0	(kgf)	E3,CH 15	0.0	(mm)	E4.CH 31	0.0	(mm
CH 16	0.0	(uSt)	ACC, 4	0.0	(%)	E1,CH 16	0.0	(mm)	E2.CH 16	0.0	(kgf)	E3,CH 16	0.0	(mm)	E4.CH 32	0.0	(mm
201:	2-07-24		오징	11:38													1

- After test, operator can save all data by "Save as" menu as CVS file.

5. Graph copy : Operator can copy graph or text by "Graph copy" or "Text Copy" in file menu to clipboard and paste it Excel program.





1 channel	250.00 (mm)
2 channel	25.00 (mm)
3 channel	125.00 (uSt)
T Strain	-10000 (uSt)
5 channel	250.00 (mm)
I 6 channel	-1.75 (mm)

If channel change to red color, it means errors as like something wrong of sensor or setup error of sensor, etc.

- 6. pause : Stop measurement temporarily .
- 7. autozero : by this menu, zero point is balanced during testing.
- * If power is down suddenly during test, back up data can be saved by "Save as" menu after reboot of program.

M. Dynamic Mode Test



1). After setup of the above step, move to main screen to measure and display data.

2). If click menu of "Measure Start", data is recorded and graph is displayed.

1 channel	250.00 (mm)
2 channel	25.00 (mm)
3 channel	125.00 (uSt)
☐ Strain	-10000 (uSt)
5 channel	250.00 (mm)
🕫 6 channel	-1.75 (mm)

*If channel change to red color, it means errors as like something wrong of sensor or setup error of sensor, etc.

- 1. Autozero : by this menu, zero point is balanced during testing.
- 2. Free : Remove zero balance.
- Time Graph 🖬 Multiscan [Dynamic Mode] Sensor Setup[S] Graph Setup[G] Measure Start[M] Autozero[Z] Free[E] X-Y Graph[X] TimeGraph(1)) II 🍃 🌏 🛠 4 measure & save 200 sampling/sec Displacement (mm) Load (kN 100.0 90.0 70.0 50.0 40.0 20.0 10.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -80.0 -90.0 00:05:00 00:05:00 00:07:00 00:08:00 00:09:00 00:10:00 00:11:00 Time (hh:mm:ss) 1 channel 0 (mm) R 9 channel 2.00 (M) E 17 channel 25 channel R 10 channel 2 channel 0 (mm) -3.30 (mm) 18 channel 26 channel 3 channel 0.0000 (mm) 11 channel 19 channel 27 channel 4 channel 12 channel E 20 channel E 28 channel 0.0000 (mm) 5 channel 0.000 (mm) 13 channel E 21 channel E 29 channel 14 channel 0.000 (mm) E 22 channel 30 channel 6 channel 7 channel 15 channel E 23 channel 31 channel 0 (mm) 16 channel 8 channel 0.00 (mm) 24 channel 32 channel 2006-08-22 오후 246

4. All-CH : Operator can see measured values of all channels.

Multisc	an [D	ynamic	mode]													٦
(E) Se	nsor Set	(<u>2</u>]q	Graph Setup[6] Mea	sure St	art[M] Mis		(P) Au	lozero[<u>Z</u>]	Free(E)	1	imeGraph[]]	X-Y Graph(3	AII CH[A]		
		3 8]											
					200	sampling/	sec mear	sure _sa	nve							
CH 1	0.0	(1)	CH 17	0.0	(uS0		0.0			0.0		E3.CH 1	0.0 (mm		0.0	
CH 2	0.0	09)	CH 18	0.0	(uS0		0.0			0.0		E3.CH 2	0.0 (mm		0.0	
СН 3	0.0	(1)	CH 19	0.0	(uSt)		0.0			0.0		E3,0H3	0.0 (mm		0.0	
CH 4	0.0	00	CH 20	0.0	(%)		0.0			0.0		E3,CH 4	0.0 (mm		0.0	
CH 5	0.0	(1)		0.0			0.0			0.0		E3,CH S	0.0 (mm		0.0	
CH 6	0.0	(11)		0.0			0.0			0.0		E3,CH 6	0.0 (mm		0.0	
CH 7	0.0	(1)		0.0			0.0			0.0		E3.CH 7	0.0 (mm		0.0	
CH 8	0.0	(1)		0.0			0.0			0.0		E3.CH 8	0.0 (mm		0.0	
CH 9	0.0	(uSt)		0.0			0.0			0.0		E3.CH 9	0.0 (mm		0.0	
CH 10	0.0	(uSt)		0.0			0.0			0.0		E3,CH 10	0.0 (mm		0.0	
CH 11	0.0	(uSt)		0.0			0.0			0.0		E3, CH 11	0.0 (mm		0.0	
CH 12	0.0	(uSt)		0.0			0.0			0.0		E3, CH 12	0.0 (mm		0.0	
CH 13	0.0	(uSt)		0.0			0.0			0.0		E3,0H 13	0.0 (mm		0.0	
CH 14	0.0	(uSt)		0.0			0.0			0.0		E3,CH 14	0.0 (mm		0.0	
CH 15	0.0	(uSt)		0.0			0.0			0.0		E3,CH 15	0.0 (mm		0.0	
CH 16	0.0	(uSt)		0.0			0.0			0.0		E3.CH 16	0.0 (mm		0.0	
	,									,					,	
2012	2-07-24		21	4.02												

40.0 36.0 32.0

28.0 16.0 8.0 4.0 -4.0

-8.0 -12.0 -20.0

-28.0

-36.0

	Multiscan [Dynam	nic model						668
5. X-Y Graph	File[E] Sensor Setup[S]	Graph Setup[G]	Measure St	Measure Stop[P]	Autozero[Z]	Free[E] TimeGraph(] X-Y Graph(X)	AII CH[A]
) I 💕 🥔 🦻	2	4					
			200	sampling/sec measure	5. save			
	Strain (uSh							Volt 00
	100.0							10.0
	00.0							- 8.0
	60.0							- 6.0
	40.0							- 4.0
	20.0 -							- 2.0
	0.0							- 0.0
	-20.0 -							2.0
	-40.0 -							4.0
	-60.0 -							6.0
	-80.0 -							8.0
	-100.0							-10.0
	00:00:00 00:00	0.01 00.00.02	00.00	:03 00:00:04	00:00:05	00:00:06 00:00:07	80.00.00	00:00:09 00:00:10
				Time (hhommoss)			
	CH 1	0.0 (uSt)	🗆 СН 9	0.0 (uSt)	🗆 CH 17	0.0 (uSt)	CH 25	0.0 (uSt)
	CH 2	0.0 (uSt)	🗆 CH 10	0.0 (uSt)	🗆 CH 18	0.0 (uSt)	E CH 26	0.0 (uSt)
	🗆 СН З	0.0 (uSt)	CH 11	0.0 (uSt)	🗆 CH 19	0.0 (uSt)	🗆 CH 27	0.0 (uSt)
	CH 4	0.0 (uSt)	🗆 CH 12	0.0 (uSt)	T CH 20	0.0 (uSt)	T CH 28	0.0 (uSt)
	🗆 CH 5	0.0 (uSt)	🗆 CH 13	0.0 (uSt)	CH 21	0.0 (kgf)	CH 29	0.0 (uSt)
	🗆 СН 6	0.0 (uSt)	CH 14	0.0 (uSt)	CH 22	0.0 (uSt)	CH 30	0.0 (uSt)
	E CH 7	0.0 (uSt)	T CH 15	0.0 (uSt)	CH 23	0.0 (uSt)	СН 31	0.0 (uSt)
	П СН В	0.0 (uSt)	CH 16	0.0 (uSt)	CH 24	0.0 (uSt)	E CH 32	0.0 (uSt)
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- 1). X-Axis Auto Scale : Set X-axis range automatically.
- 2). Y-Axis Auto Scale : Set Y-axis range automatically.
- 3). Set graph range in real time.
- 4). X-Y Graph Setup

*Title :	Input	titles of	X axis,	Y1	axis,	Y2	axis.
*Plot :	Select	channel	of X a	kis a	and Y	axi	s.

- *Plot-1 : Channel : Select No.1 graph.
- *Y-Axis : Select Y axis of No1 graph.
- *Plot-2 : Channel : Select No.2 graph.
- *Y-Axis : Select Y axis of No2 graph.

*Setup of Plot-3,4 is same with the setup and if select "none", this No. channel is not displayed. *Axis-1is axis of Y1, Axis-2 is axis of Y2.

Y Graph S	etup				
X & Di VI & Di	splacement (mm rad (kN))			Qk by Cancel
Plot X Axis	9Channel				
Plot - 1 Plot - 2	Channel 10Channel 11Channel	•	Y - Axis Axis-1 Axis-2	-	
Plot - 3 Plot - 4	12Channel	•	Axis-2	•	

6. Graph Setup -> Color

1). Select color of graph.



IX. Analysis Mode

* After "Measure Stop", operator can find Analysis button. And if click it, the below widow is loaded.



1. Menu

- * File : Exit : Exit analysis mode
- * Analysis mode

Time – Plot : Display time graph XY – Plot : Display XY graph FFT –Plot : Display FFT graph

* Analytic function

Digital filtering : Set digital filter frequency(Low Pass Filter) to remove noise N point average : Calculate average of measured values.

- 2. Time-Plot* Graph type
- Graph type

Multi Graph –

* Multi graph - Display 4 channels in a graph.

- * Single graph Display 1 channel in a graph.
- 3. Graph Copy : copy graph to clipbord.
- 4. Channel select and graph display

		Avg.	Max.	Min.	P - P	Cursor X	Cursor Y
	J CH 2	0.07	2.46	-0.67	3.13		
E	U CH B	0.06	2.10	-0.62	2.72		
	- CH 4	0.04	1.64	-0.71	2.35		
	CH 12	1.00	1.62	0.41	1.21		

Select channel by check box to display graph.

Select Ch	2 channel 💌
Graph Color	
	백인

- * Ch select : Select channel for display.
- * Graph color : Select line color of graph
- * "OK" button : Click after setup.
- * Avg : Display average value.
- * Max. : Display maximum value.
- * Min. : Display minimum value.
- * P-P : Display maximum value minimum value
- * Cursor X : Display X axis value in cursor mode.
- * Cursor Y : Display Y axis value in cursor mode.



- 5. Graph Operation
 - Scroll : Operator can set graph range by mouse drag roll.
 - Cursor : If operator drag cursor by mouse, X and Y value is displayed.
 - Zoom : Zoom selected parts by mouse drag.
 - Zoom out : Zoomed part return to original size.



[Time – Plot : Single graph]

* Ch select : Select channel for display.

☑ 2 ch ☑ 3 char	Ch Select
IV 4 chan IV 12 cha	inel nnel
CH SELECT	
Select Ch	2 channel 💌
Graph Color	
	R2

*Select channel by check box to display graph.

* Display number of graph same with numbers of selected channel.

- * Ch select : Select channel for display.
- * Graph color : Select line color of graph
- * "OK" button : Click after setup.

- 7. Graph Operation
 - * Scroll : Operator can set graph range by mouse drag roll.
 - * Cursor : If operator drag cursor by mouse, X and Y value is displayed.
 - * Zoom : Zoom selected parts by mouse drag.
 - * Zoom out : Zoomed part return to original size.





[Cursor]

[Time - Plot : Single Graph - Cursor Mode]



9. XY – Plot



10. FFT – Plot



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12. Analytic function



* Graph 1 : Display graph1.

- * Graph 2 : Display graph2.
- * Graph 1,2 : Display graph1 and 2 at once.
- * CH Overwrite : Change graph1 to graph2.
- * CH Add : Display graph2 to new channel.
- * Save As : Save data file as selected setup.

Data save
 CH Overwrite
C CH Add,
Save As

Min

-0.700

Avg.

0.092

Graph Copy

1

2

Max

2.730

Sheet Copy

END

P-P

3.430

- * Display average value, minimum value, maximum value P-P value of selected channel.
- * Display average value, minimum value, maximum value P-P value of averaged value.
- * Graph Copy Copy graph to clipboard.
- Operator can paste it to the excel program by [Ctrl + V].
- * Sheet Copy Copy sheet to clipboard.
- Operator can paste it to the excel program by [Ctrl + V].
- * END Out digital filter.

* N-point average filter	
--------------------------	--



- * Select CH : Select channels in the list.
- * Avg. count : Set average numbers
- * OK : Display averaged values on graph. Display it by red color on graph2.
- * Offset : Set offset value.
- * [OK] Apply offset value and display graph.

Avg. count
ОК
Offset
€) 0.00
ОК

- * Graph 1 : Display graph1 (original graph).
- * Graph 2 : Display graph2 (averaged graph).
- * Graph 1,2 : Display graph1 and 2 at once.
- * CH Overwrite : Change graph1 to graph2.
- * CH Add : Display graph2 to new channel.
- * [Save As] : Save data file as selected setup.

Graph select—			
Graph 1	Graph 2	Graph 1,2	
Data save		K ISA	
Dulu Sure		2.00	
 CH Overw 	rite	50	
C CH Add,			
		60	
		20	
		5° 10	
Save	As		

- * Display average value, minimum value, maximum value P-P value of selected channel.
- * Display average value, minimum value, maximum value P-P value of averaged value.
- *[Graph Copy] Copy graph to clipboard.
- Operator can paste it to the excel program by [Ctrl + V].
- *[Sheet Copy] Copy sheet to clipboard.
- Operator can paste it to the excel program by [Ctrl + V].
- * [END] Out N-point filter.

	Avg.	Min	Мах	P-P	
1	0.092	-0.700	2.730	3.430	
2					
Graph Copy Sheet Copy					
END					