CE

Approved for Digital Weigh Indicator

Digital Weighing Indicator

SI 4410

Instruction Manual

SEWHACNM
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CONTENTS

1. BEFORE INSTALLATION

1-1. Caution / Warning Marks

 *Warnina*	This mark warns the possibility to arrive death or serious injury in case of wrongly used.
 *Caution*	This mark cautions the possibility to arrive serious human body injury or product lose in case of wrongly used.

1-2. Other Marks

	Warning for Electric Shock or Damage. Please do not touch by hand
	Protective Ground(Earth) terminal
	Prohibition of Operation process

1-3. Copy Rights

1). All Right and Authority for this Manual is belonged to Sewhacnm Co.,Ltd.

2). Any kinds of copy or distribution without Sewhacnm Co.,Ltd's permission will be prohibited.

1-4. Inquiries

If you have any kinds of inquiries for this model, please contact with your local agent or Head Office.

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Email : sales@sewhacnm.co.kr

2. INTRODUCTIO

2-1. Introduction

Thank you for purchase this "SI 4410" Industrial Digital Weighing Controller.

This "SI 4410" model is advanced model of "SI 3200", with powerful communication performance.

With **2ports serial port interfaces** and precise weighing control system, you can upgrade your weighing process.

This "SI 4410" Weighing Controller has various kinds of "Weighing Mode", like Limit, Packer, Loss-in Weighing(Minus Limit), so you can apply various kinds of weighing application.

Enjoy your process with "SI 4410" Weighing Controller.

2-2. Cautions

Cautions

1) Don't drop on the ground or avoid serious external damage on item.
2) Don't install under sunshine or heavy vibrated condition.
3) Don't install place where high voltage or heavy electric noise condition.
4) When you connect with other devices, please turn off the power of item.
5) Avoid from water damage.
6) For the improvement of function or performance, we can change item specification without prior notice or permission.
7) Item's performance will be up-dated continuously base on previous version's performance.

2-3. Features

1) All Modules and Option Cards are isolated to maximize accuracy and performance.
2) Self diagnose function
3) External input terminal inside.(4pcs:Can be set by F11 mode)
4) By using "Photo-Coupler" on each module(Option, Analog board, In/Out), we improved "Impedance problem", "Isolation ability among inputs", "Leading power problem", and "Noise covering function".
5) Data back-up function, when the sudden power off.
6) **"Set value Error" check function** added. – Check "Set values for each weighing mode".

- If there is any wrong set value, **"E"** will be display and will not start weighing process

7) Polycarbonate film panel, strong for dust and water.
8) Weight Unit selection Function added. ("g", "kg", "t" selectable – F40)
9) Variable options(Order in advance, Refer Chapter 6. Interface) – "RS-232C" Standard installed.
10) Improved **"Automatic Free Fall(In-flight) Compensation"** function added. – Suitable for "Liquid Filling" system **(Can compensate "minus" weight)**
11) **2port Serial Interface available** – various applications (monitoring, printing, and Command mode) are available**.**

3. SPECIFICATION

3-1. Analog Input & A/D Conversion

Input Sensitivity	0.2㎶ / Digit
Load Cell Excitation	DC 10V (- 5V ~ + 5V)
Max Input Signal	Max3.2mV/V
Temperature Coefficient	[Zero] ±20PPM/℃ [Span] ±20PPM/℃
Input Noise	±0.3㎶ P.P
Input Impedance	Over 10㏁
A/D Conversion Method	Sigma-Delta
A/D Resolution(Internal)	520,000 Count(19bit)
A/D Sampling Rate	Max 500times / Sec
Non-Linearity	0.005% FS
Display Resolution(External)	**1/20,000**

3-2. Digital Part

Display	**Parts**	**Specification**
Main Display	Display weight	7Segments, 7digits VFD green Color Size :12.7(H) ×7.0(W)mm
	Min. Division	×1, ×2, ×5, ×10, ×20, ×50
	Max display value	+999,950
	Under Zero value	"-" (Minus display)
Sub-Display	P/N, FREE FALL, FINAL, PRE2, PRE1	7Segments, 6digits FND, Red Color Size : 9.2(H) ×4.8(W)mm × 4pcs
Status lamp	Steady, Zero, Tare, Run, Gross, Print, Comm.	" ▼" Condition display Lamp
	kg, g, t / FINAL, PRE1, PRE2	Red / Yellow-Green LED Display(3Ø)
K e y	Number Key, Function, CAL. Lock key (14pcs)	

3-3. General Specification

Power Supply	AC110/220V(±10%), 50/60Hz, about 30VA
Operating Temperature Range	-10℃ ~ 40℃
Operating Humidity Range	Under 85% Rh (non-condensing)
External Dimension	200mm(W) x 105mm(H) x 165mm(L)
Net Weight(kg)	About 2.3kg
Gross Weight(kg)	About 3.0kg

※ AC 110V, Power supply is an optional before ex-factory.

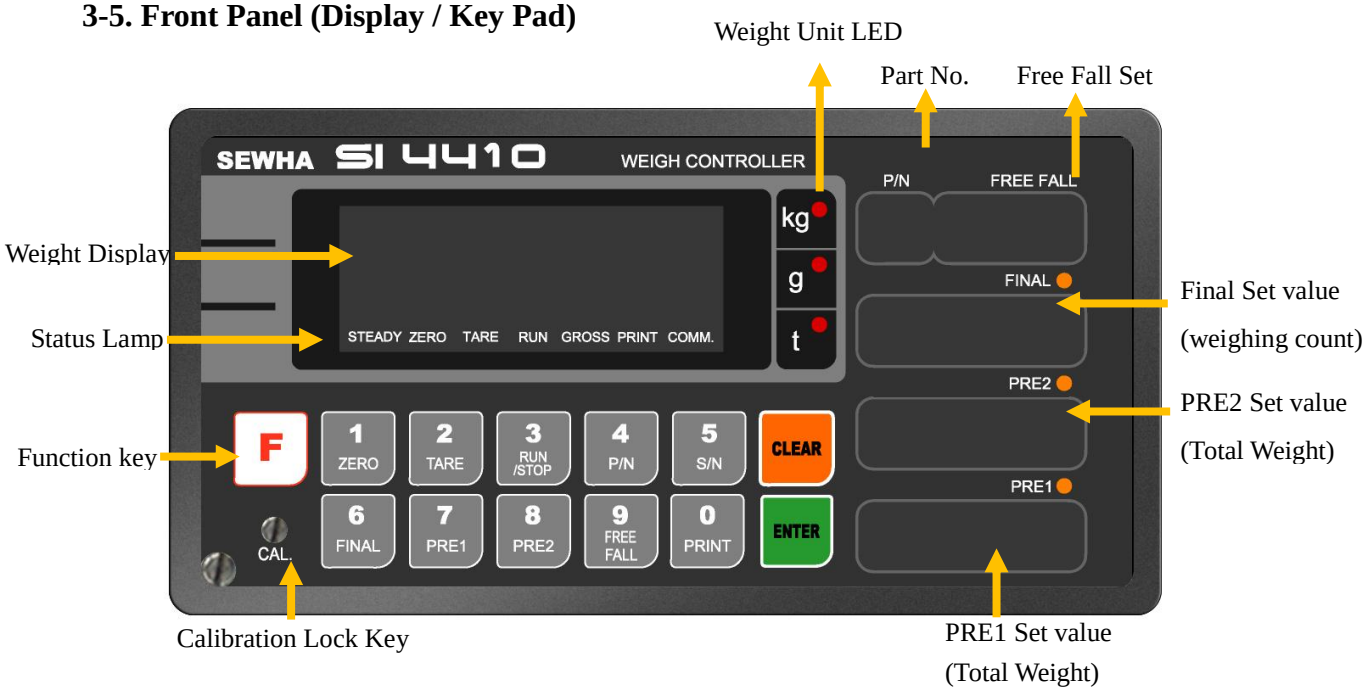
3-4. Option Card

Option No.1	Printer Interface : Centronics Parallel
Option No.2	Analog Output (0~10V or 0~5V)
Option No.3	Analog Output (4~20mA)
Option No.4	Serial Interface : RS-232C / 422 / 485
Option No.5	BCD INPUT (P/N change purpose)
Option No.6	BCD Output
Option No.7	Ethernet

※ Serial Interface (RS-232C) or Current Loop is Standard installed.

In the Optional Serial port, there is no Current Loop function

3-5. Front Panel (Display / Key Pad)



※ Through the "Front display", you can check various weighing information, like weight unit, each set value, relay output, accumulated weight of each P/N or all P/N.

3-5-1. Status Lamp (ANNUNCIATORS) : "▼" Lamp is "ON".

Steady	When the weight is Steady, "▼" Lamp is turn on.
Zero	When the current weight is Zero, "▼" Lamp is turn on. (Displayed weight is Zero, "▼" Lamp is turn on.)
Tare	Tare function is set, "▼" Lamp is turn on. (Tare Reset → "▼" Lamp is turn off.)
Run	Weighing Batch is started, "▼" Lamp is turn on.
Gross	When display Gross weight(Net weight + Tare Weight), "▼" Lamp is turn on. (Under F19-01 setting)
Print	When print key input or Auto print, "▼" Lamp is turn on.
Comm.	When indicator transfers or receives data from other devices, "▼" Lamp is turn on. (If the "▼" is off although there is some data transference, please check communication settings).

3-5-2. Key Operation

	Make Weight value as Zero. Under F08, you can set the Zero key operation range, as 2%, or 5%, or 10%, or 20% of Max Capacity. ※ Under "Tare" key input, Zero key will not be activated.
	Make Weight value as Zero, including Tare Weight. Under F09, you can set the Tare key operation range, as 10%, 20%, 50%, or 100% of Max Capacity. **Tare setting : Under F10-00 setting, "TARE" key input** **Under F10-01 setting, "Tare"+ No. key + "Enter"**
	Remove set TARE value.
	**1. To START or STOP weighing process.** First input, SI 4410 Controller Starts weighing process, and Second input, SI 4410 Controller stops weighing process. ※ This function will be activated under F21-02, 04, 05, 06, 07 setting, only.
	You can set each weighing process as a certain P/N. Each weighing process will be saved with FINAL, PRE1, PRE2, and Free Fall set value.(Max 50 kinds of P/N you can set) And you can call certain P/N with each set value. P/N save : Choose certain P/N and input FINAL, PRE1, PRE2, and Free Fall value and save. **P/N call : P/N + Number key + Enter**
	Set Target weight of each P/N. (Refer F21 weighing mode) ※ Each weighing mode has different concept of FINAL value. **FINAL value set : Final + Number key + Enter** **FINAL value check : Press FINAL → Display during 5sec**
	Set PRE1 weight of each P/N. (Refer F21 weighing mode) ※ Each weighing mode has different concept of PRE1 value. **PRE1 value set : PRE1 + Number key + Enter** **PRE1 value Check : Press PRE1 → Display during 5sec**
	Set PRE2 weight of each P/N. (Refer F21 weighing mode) ※ Each weighing mode has different concept of PRE2 value. **PRE2 value set : PRE2 + Number key + Enter** **PRE2 value Check : Press PRE2 → Display during 5sec**

9 FREE FALL	Set Free Fall value and control FINISH relay in advance. (Refer F20 Free Fall setting) **Free Fall value setting : Free Fall + Number key + Enter** **Free Fall value check : Press Free fall → Display during 5sec**
0 PRINT	**1. Manual Print (F38-00 setting, under F35-01)** **2. Manual weighing Data save for accumulated weighing count and weight.** (F01-00 / 02 setting) **3. Calibration mode** - Digit setting Whenever pressing "0"key, digit will be change 1, 2, 5, 10, and 50. - Decimal point position Whenever pressing "0"key, decimal point will be change.
CLEAR	**1. Modify the set value during setting process.** **2. Calibration mode** - Move back to previous step. F-function Mode. - F-function Exit : Press "Clear" key, once. - F-Test Mode Exit : Press "Clear" key, twice.
ENTER	**1. Save set value during setting process.** **2. Calibration mode** - Save current setting and move to next step. **3. F-Function mode** - Save current F-function setting, and move to next F-function
F	**1. "F-TEST" Mode Entrance : Press "F" key for 5sec.** 2. Under "F-function Mode", Move to next Function or move to certain function No.(Press function No. and press "F" key) 3. Function key (Refer "Function keys")
CAL.	Enter/Exit to "Calibration" mode.

※ Function Keys (Combined Key functions)

Function Key		Contents
F	4 RUN /STOP	**Manual Discharge** If there are not enough material to process one weighing process in the scale, you can discharge the remained material with this function. (Only for F21-02, 04, 05, 06, 07 mode) Please refer **"F29"** for more information.

F	5 P/N	Print all P/Ns' accumulated weighing count and weight. (Grand-Total Print)
F	6 FINAL	Print current P/N's accumulated weighing count and weight. (Sub-Total Print)
F	7 PRE1	Set "Over N.G"(Error relay) range. (If you set larger value than FINAL value, the setting is not saved)
F	8 PRE2	Set "Under N.G"(Error relay) range. (If you set larger value than FINAL value, the setting is not saved)
F	0 PRINT	Display accumulated weighing count and weight Max accumulated weight display : 21,474,839,647(g, kg, ton) - Over 21,474,839,647(g, kg, ton) → return to "0"(g, kg, ton) Max accumulated weighing count : 999,999times - Over 999,999,999times → return to "0"times ※ Under F15, you can set what kinds of accumulated count and weight. **- F15-00 : Display current P/N's accumulated count and weight.** **- F15-01 : Display all P/Ns' accumulated count and weight**
CLEAR	5 P/N	Delete all P/Ns' accumulated weighing count and weight (If you set F44-01, the data will be automatically deleted after "Grand-Total Print).
CLEAR	6 FINAL	Delete current P/N's accumulated weighing count and weight (If you set F44-01, the data will be automatically deleted after "Sub-Total Print).

※ After Pressing F key, you have to input above function keys within 5sec. - After 5sec, the F key activation is loose

※ If you set **"F51-01"** you can check the F / CLEAR key activation through Main display.

※ After Pressing "F"/ "CLEAR" key, non-function keys are input, the "F"/ "CLEAR" key activation will be loose.

3-6. Rear Panel

① POWER AC IN

- Power switch : Power on/off switch.
- Fuse : AC250V / 0.5A , φ5.25 , 20mm.
- AC IN : Available Input AC 110V / 220V.

Warning

※ The standard power supply is AC 220V(Fixed when ex-warehouse), if you want to have AC 110V, please inform in advance.

② Option Card 1

③ Option Card 2

※Option Card Connector installed for Optional Interface or Output.

(Printer I/F, Analog out, RS-422/485, or RS-232C(two port)

④ LOAD CELL Connector (N16-05)

⑤ SERIAL I/F

"RS-232C" or "CURRENT LOOP"(9Pin, D-Type Female) are built-in as standard

⑥ External Input : External control input for wired remote control.

Refer to F-Function F11 to select desired function mode.

Input signal …… Optical-Isolator

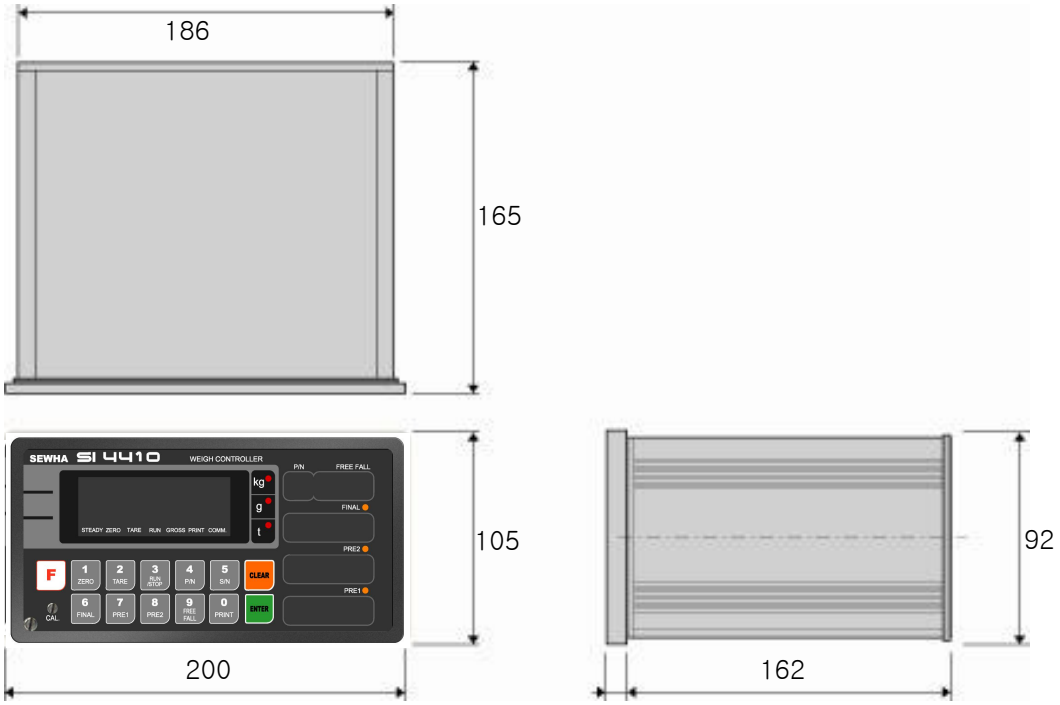
⑦ Relay Output Terminal : Set point(SP1, SP2, SP3, SP4) and Finish, Empty relay output.

(Refer "F21" setting.)

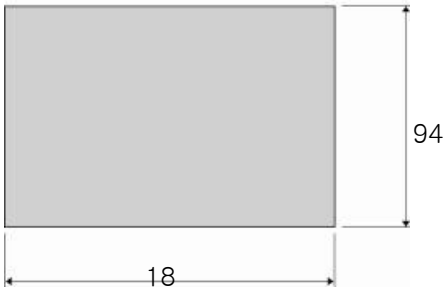
4. INSTALLATION

4-1. External Dimension & Cutting Size

(External Dimension) (unit : mm)



(Cutting Size) (unit : mm)

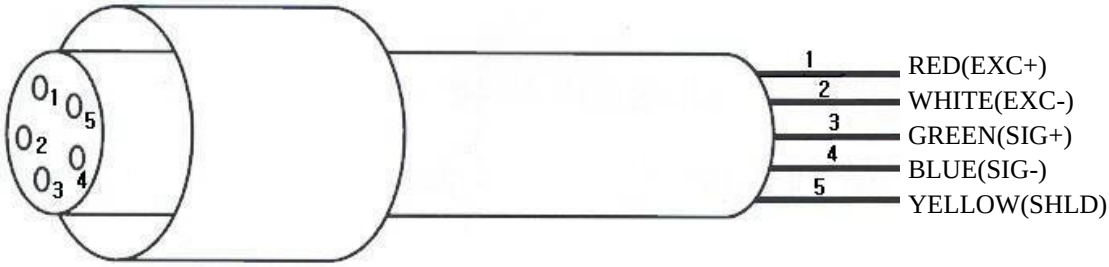


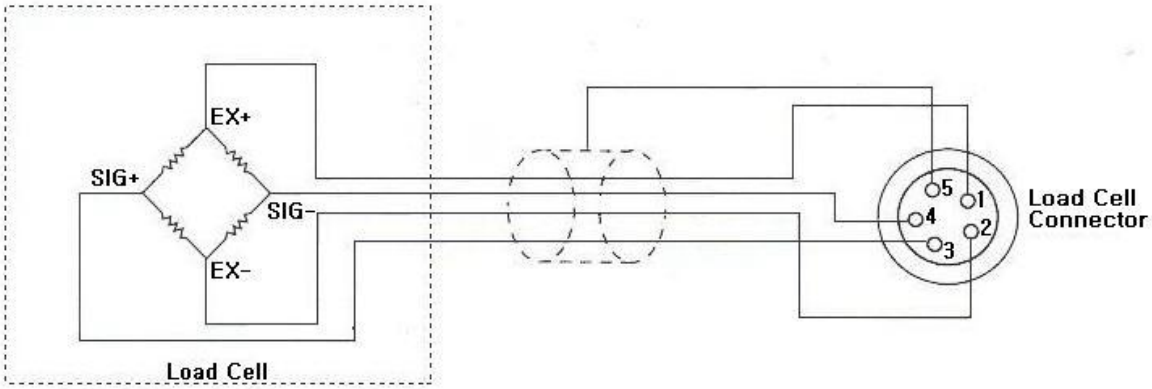
4-2. Installation Components

Power Cable	Communication Connector (D-SUB 9P)	Load-cell Cable
		

4-3. Load Cell Installation

4-3-1. Load Cell Connector Specification





4-3-2. Load Cell Installation

1) You can connect Max 8pcs of same capacity Load cells at once. (350Ω)

2) You have to make horizontal balance on the ground.

3) If you install more than 2pcs of Load cells, use Summing box and adjust output signal difference as minimum. It can make wrong weighing process caused by each load cell's variation.

4) If there is some temperature difference around Load cell, it can cause wrong weight measurement.

5) Don't do Welding job or Arc discharge around installation place. But, there is no choice, please disconnect power cable and Load cell cable.

6) If you measure static electricity material, please make earth between down part and up part of Load cell.

4-3-3. Formula to plan the precise weighing system

This "SI 4410" weighing controller's Max input sensitivity is **0.2μV / Digit**.

And for precise weighing system, the following formula must be satisfied.

Caution : "Input sensitivity" means Min. output voltage variation of weighing part to change 1digit. So, please do not make large input voltage to make reliable weighing system.

Single Load cell use	$0.2\mu V \leq \frac{E \times B \times D}{A}$	A : Load cell capacity(kg) B : Load cell Voltage(mV) D : Digit E : affirmation Voltage of Load cell N : Number of Load cell
Plural Load cells use	$0.2\mu V \leq \frac{E \times B \times D}{A \times N}$	

Example1.)

Number of Load cell : 1pcs

Load cell capacity : 500kg

Load cell Voltage : 2mV/V

Digit : 0.05kg

Affirmation Voltage of Load cell : 5,000mV

Max Capacity of Weighing System : 300kg

Then, estimation result for this weighing system with formula,

$$\frac{5000 \times 2 \times 0.05}{500} = 1 \geq 0.2\mu V$$

The calculated value is larger than 0.2μV, so this system has no problem.

Example2.)

Number of Load cell : 4pcs

Load cell capacity : 500kg

Load cell Voltage : 2mV/V

Digit : 0.10kg

Affirmation Voltage of Load cell : 5,000mV

Max Capacity of Weighing System : 1,000kg

Then, estimation result for this weighing system with formula,

$$\frac{5000 \times 2 \times 0.10}{500 \times 4} = 0.5 \geq 0.2\mu V$$

The calculated value is larger than 0.2μV, so this system has no problem.

※ According to "Resolution" or "Capacity", it might not be calibrated like calculation.

5. SET-UP

5-1. Calibration

Calibration is the process of adjusting weight balance between "Real weight" on the load cell and "Displayed weight of Indicator". When you replace LOAD CELL or Indicator, you have to do Calibration process once again

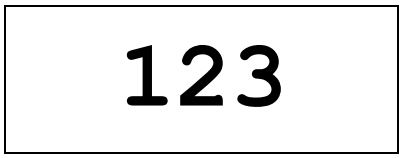
5-2. Test Weight Calibration Mode (Using Test weight)

Prepare the test weight as at least 10% of your weighing scale's max capacity.

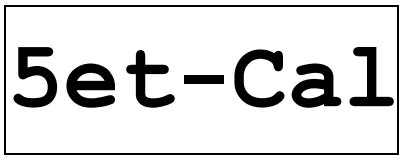
Remove **"CAL-BOLT"** on the indicator's front panel and press **"CAL - LOCK S/W"** inside.

※Remark: If "P-W" is displayed, you should input the pass word to start calibration mode.

1. At normal mode, remove "CAL-BOLT" on the Front panel



2. And press "CAL - LOCK S/W" inside.
   Check the "SET-CAL. message on display.



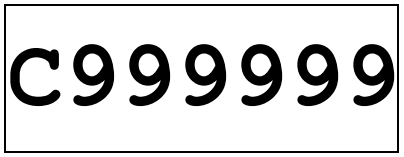
※ To save the each step, press 

key, and for the cancel or move back, press 

key.

3. If you press 

key, Calibration Mode starts.
   After displaying "C999999".

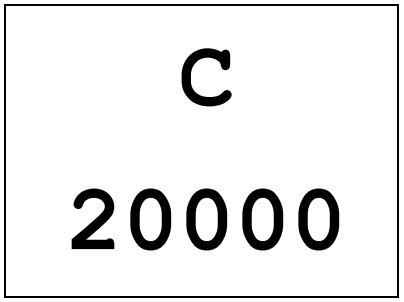


4. Input the max capacity of your weighing scale,

And press 

key.

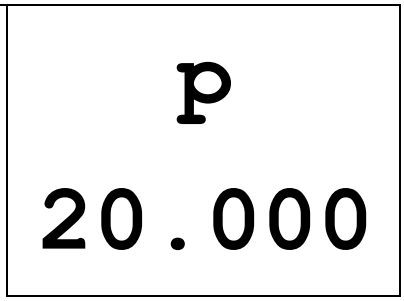
Ex) Load cell CAPA : 20kg, division : 0.001 → Input 20000



Whenever you press 

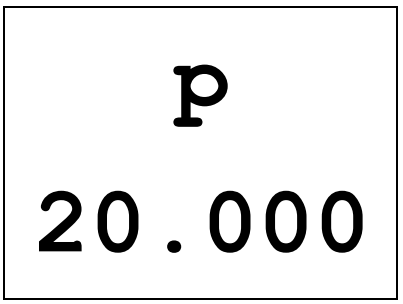
key, the location of decimal point will be changed.

Ex) Load Cell CAPA : 20kg, division : 0.001kg → input 20.000



6. Press 

key to save and move to next step.

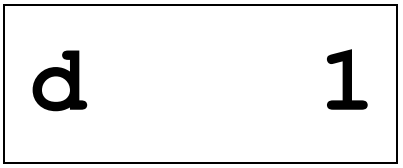


7. Define the optimal Digit/Division value of weighing measurement.

Whenever you press 

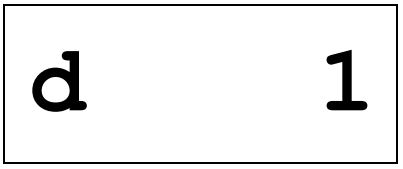
key, the Digit/Division value will be changed in order of "1 → 2 → 5 → 10 → 20 → 50" .

Ex) Load cell CAPA : 20kg, division : 0.001 → Input division "1"



8. press 

key to save the Digit/Division value and move to next step.

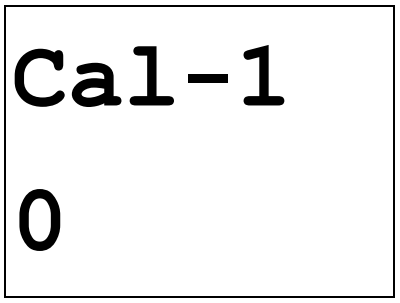


※ **Caution : (Division value /Max capacity value)** cannot over **1/20,000**.
If the division is so small compare with max capacity, Error message **" Err 01 "** will be displayed and move back to **"CAPA"** step again.

9. When you press 

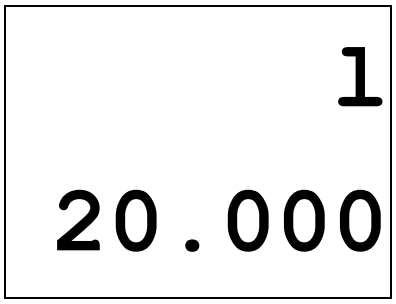
key, the indicator starts the dead process to find "Zero" span.

10. Indicator will search "DEAD weight" during 5seconds.
After find optimal "Zero" span , step is automatically Moves to next.



※ **Caution:** At this step, if there is some force or vibration on weighing scale, and unstable condition will be continued, **"ErrorA"** will be display, and "DEAD value" will not be calculated.
Please remove all the force or vibration and process it again.

11. Span Calibration mode starts..



12. Input the weight of your “Test weight”. And press 

key.

Ex) Load Cell CAPA : 20kg, division 0.001

→ Use test weight which is at least 10% of max CAPA(20kg) = minimum 2kg of test weight is needed.

→ Input test weight 2.000 to indicator.

1
2.000

13. When “UP” is displayed, load your test weight on the scale (weigh bridge) Ex) Load Cell CAPA : 20kg, division 0.001

Up

14. And press 

key.

→ Do not remove the test weight from weigh bridge.

Up

15. Indicator will calculate span value during 5sec.

Cal-2
0

16. After finish calculation, span value will be displayed.

Please remove the test weight from weigh bridge.

0.6292
38

※ **Caution :** The **"Test Weight's value"** must be at least **10%** Max capacity of weighing scale.

"at least 10%" means to guarantee precise weighing process you have to make standard with at least 10% of the max capacity weight.

We programmed the calibration will not be done, when you load less than 10% of the max capacity.

17. Press 

key to save all calibration process.
After then it resets automatically.
Now, fasten the Calibration Bolt on the front panel.

end

5-3. Simulation Calibration Mode (Calibrate without Test weight)

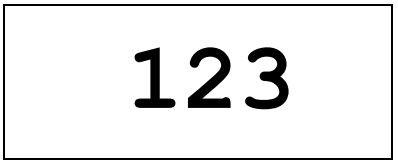
Through this **"Simulation Calibration Mode"** you can do simple calibration process without Test weight**.**

This calibration mode uses "Load cells' max capacity" and "Rated output value(mV)".

Simulation calibration's degree of accuracy is lower than test weight calibration.

By simulation calibration's characteristic, measured weight can be different with actual weight, according to load cell's actual output.

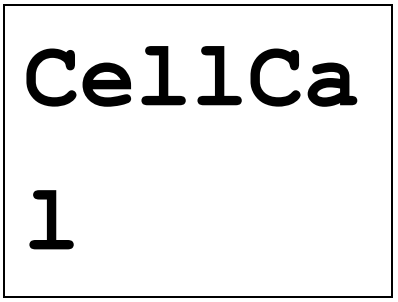
1. At normal mode, remove "CAL-BOLT" on the Front panel



2. And press "CAL - LOCK S/W" inside.
Check the "SET-CAL. Message on display.

3. Please press 

key, to start Simulation Calibration Mode.



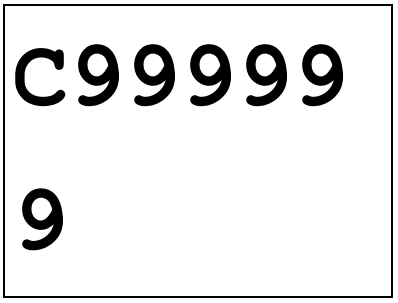
※ To save the each step, press 

key, for the cancel or move back, press 

key.

4. Press 

key to enter calibration mode.
After "CAPA" is displayed, Check the max Capacity of your load cell.
(Refer the label on the load cell, or test report.)



press  key Ex) Load cell CAPA : 30kg, division : 0.01 → Input 3000	C 3000

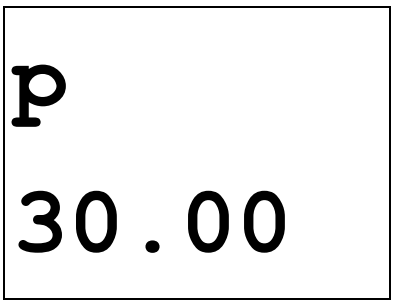
Tip In case of multiple pieces of load cells are installed, make sum of each load cell's capacity and make setting with max capacity. EX) There are 4pcs of load cells, and each load cell's Max capa is1,000kg.

Then, total Max Capacitywill be 4,000kg(1,000 x 4) and you have to input 4,000.

6. Define the optimal position or decimal point

Whenever you press 

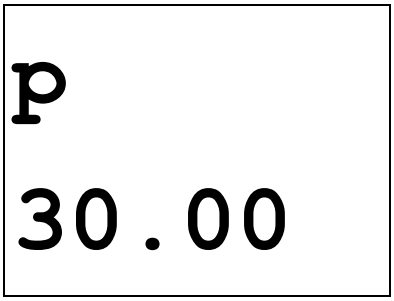
key, the location of decimal point will be changed.



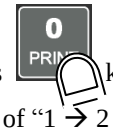
7. Press 

key to save Digit / Decimal point and move to next step.

Ex) Load cell CAPA : 30kg, division : 0.01 → Input 30.00

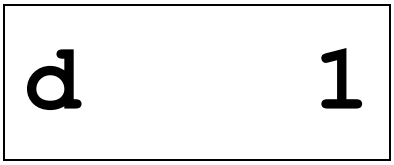


8. Define the optimal Digit/Division value of weighing measurement.

Whenever you press 

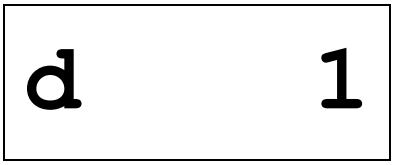
key, the Digit/Division value will be changed in order of "1 → 2 → 5 → 10 → 20 → 50" .

Ex) Load cell CAPA : 30kg, division : 0.01 → Input division "1"



9. press 

key to save the Digit/Division value and move to next step.



※ **Caution : (Division value /Max capacity value)** cannot over **1/20,000**.
If the division is so small compare with max capacity, Error message **" Err 01 "** will be displayed and move back to **"CAPA"** mode again.

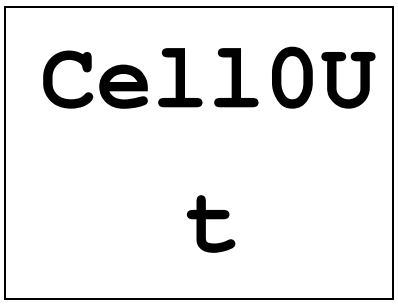
10. 10. Under this step, measure the "DEAD Weight of Weighing Scale

When you press 

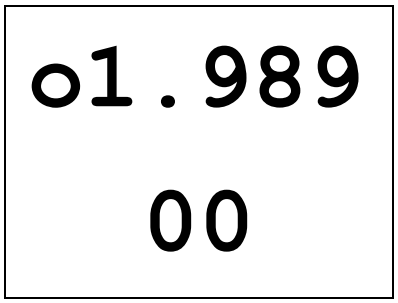
, the indicator starts the dead process to find "Zero" span.

After find optimal “Zero” span , step is automatically Moves to next.	**Cal-1** **0**

12. At this step input Max Output rate(mV) of load cell.

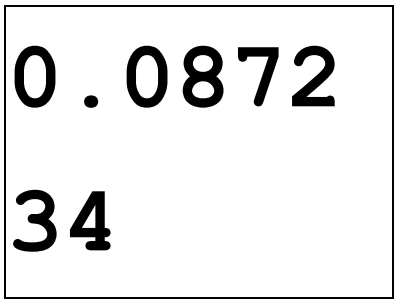


13. Input Load cell Output Rate(mV/V) (refer the load cell label)
Ex) Load cell Related output : 1.989 mV/V

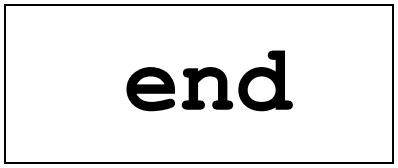


※ **Caution :** Due to some variation between **"Stated output rate"** and **"Real Output rate"** of load cell, there might be some weight difference after finishing calibration.
If you want to make more precise weighing process, please measure real output rate of load cell and input the measured value. Then the weight measurement will be more precise than before.

14. After inputting R.O. value, press ENTER key.
Calculated "Span value" will be displayed.



15. Press ENTER key to save all calibration process and fasten the Calibration Bolt.



※ **Caution :** To process "Simulation Calibration" process, All indicator has its' own standard value of 2mV gap.
So, if you replaced analogue board, you have to input standard value of 2mv gap.
And you can check the this 2mV gap value on **F96.**
(Normally, the gap value is between 200,000 ~400,000)

5-4. Set-up

Set-up means set the F-function and make SI 4410 weighing controller will perform more accuracy.

(Considering external / internal environmental condition)

5-4-1. Enter the Set-up Mode

1). Method : Press 

key for 4sec. Then you can enter "F-Test" mode. Under this mode, press No.1 key and enter the "F-function" mode.

5-4-2. F-Function Change

Under F-function mode, Whenever press 

key, the Function No. will be increased one by one. Increase to F-90 and return to F-01

If you move to certain function No., press f-function no. with number key and press 

key.

Ex.) If you want to call "F21-XX " directly under "F-function mode".

Press " 

" and " 

" key and press 

key.

Then, you can call "F22-XX" directly.

5-4-3. F-Function Set Value Change

Under F-Function mode, input New set value with Number keys and press 

key to save.

If you don't press 

key, the new set value will not be memorized.

Ex.) If you want to change the "F01-01" to "F01-02".

Under "F01-01" mode, press " 

" and " 

" key.

And press 

key to save.

5-4-4. Exit "F-function" Mode

Under “F-function” mode, press 

key, you can move back to “F-Test” mode.

Under “F-Test” mode, press 

key once again, you can move back “Stand-by” mode.

5-5. F-Function List

■ **General Function Setting** (● Factory default set value)

Weighing Data Save Method Selection (Apply on Accumulated weighing count/weight)				
F01	●	0	Manual Save Mode (Save when "Print" key input)	
		1	Automatic Save Mode(Save when weighing is Finished)	
		2	Combined Save Mode (Save when "Print" key input or weighing is Finished)	
Weight-Back up selection				
F02		0	Normal Mode	
	●	1	Weight Back up Mode	
Motion Band Range setting				
F03	06	00 ∫ 50	This is set "Steady" acceptable range of weighing part. If there is vibration on weighing part, you can set this function and reduce the vibration effect on weighing process. 0 : Weak vibration ~ 50 : Strong Vibration	
Zero Tracking Compensation Range setting				
F04	02	00 ∫ 09	Due to external causes(Temperature, wind, and dust), there are small weight difference, indicator will ignore the weight difference and display Zero. For this compensation function, indicator will estimate the weight difference is over the set range during fixed time period. If there is large weight difference over set range within fixed time period, the "Zero" is breaking and will find new zero point.	
Auto Zero Range setting				
F05	00	00 ∫ 99	Within the "Auto Zero" range, weighing part is steady, indicator will display current weight as "Zero" If the weighing part is not "Steady", indicator will display current weight. (Auto Zero Range : ± Set value + weight unit)	
Digital Filter setting				
F06	23	AB	A : Frequency Filter setting value (0~3) (0 : about 200Hz/sec, 3 : about 500Hz/sec) B : Buffer Filter setting value (1~9)	If "B" set value is fixed, "A" set value is large, the indicator will response more sensitive.
Zero /Tare key Operation mode selection				
F07	●	0	Activate when "Steady" condition, only	
		1	Always activated	

Zero key Operation Range selection			
F08		0	Activated within 2% of Max Capacity
		1	Activated within 5% of Max Capacity
	●	2	Activated within 10% of Max Capacity
		3	Activated within 20% of Max Capacity
		4	Activated within 50% of Max Capacity
		5	Activated within 100% of Max Capacity
		6	Whenever Press "Zero" key (No Limit)
Tare key Operation Range selection			
F09		0	Activated within 10% of Max Capacity
		1	Activated within 20% of Max Capacity
	●	2	Activated within 50% of Max Capacity
		3	Activated within 100% of Max Capacity
"Key TARE" Operation Selection			
F10	●	0	Key TARE Function Not Use.
		1	Key TARE Function Use

External Input Selection						
	Set Value		**Input 1**	**Input 2**	**Input 3**	**Input 4**
F11		0	RUN	STOP	TARE	TARE RESET
		1	RUN/STOP	TARE/ TARE RESET	ZERO	PRINT
		2	RUN	STOP	PRINT	SUB-TOTAL PRINT
	●	3	ZERO	TARE	TARE RESET	NET WEIGHT/ GROSS WEIGHT
		4	RUN	STOP	ZERO	PRINT
		5	RUN	STOP	ZERO	TARE/ TARE RESET

"STEADY" condition check time setting			
F12	03	00~20	During the set time period, estimate weighing part's "STEADY" condition and display. If you set small value, indicator will take "STEADY" fast, if you set large value, indicator will take "STEADY" slow.

Display Up-date rate selection (per 1 sec)			
F13	●	0	238 times
		1	102 times
		2	64 times
		3	47 times
		4	34 times
		5	31 times
		6	26 times
		7	23 times
		8	20 times
		9	18 times
(FINAL, PRE1, PRE2, Free Fall) Set value apply selection			
F14	●	0	Apply only certain P/N
		1	Apply same set value to all P/N
SUB/GRAND Total Display mode selection			
F15	●	0	Display Accumulated weighing count and weight of current P/N (SUB TOTAL DATA Display)
		1	Display Accumulated weighing count and weight of all P/N (GRAND TOTAL DATA Display)
Minus(-) symbol display selection			
F16	●	0	Display (-) symbol on the display
		1	Not use
"NEAR ZERO" relay output mode selection			
F17	●	0	Display weight is Zero(Including "TARE" Zero)→ Near Zero relay output
		1	Only Gross Zero(Net weight + TARE) → Near Zero relay output
Equipment No. setting			
F18	01	01 ∫ 99	Equipment No. setting with No. key. (01 ~99 settable)
Gross Weight Display selection(Display on PRE1, PRE2 display window)			
F19	●	0	Not Display
		1	Display on PRE2 display window

※ Gross weight will be display on PRE1 and PRE2 display window, and PRE1 and PRE2 set values will be display, only when PRE1, PRE2 key input.

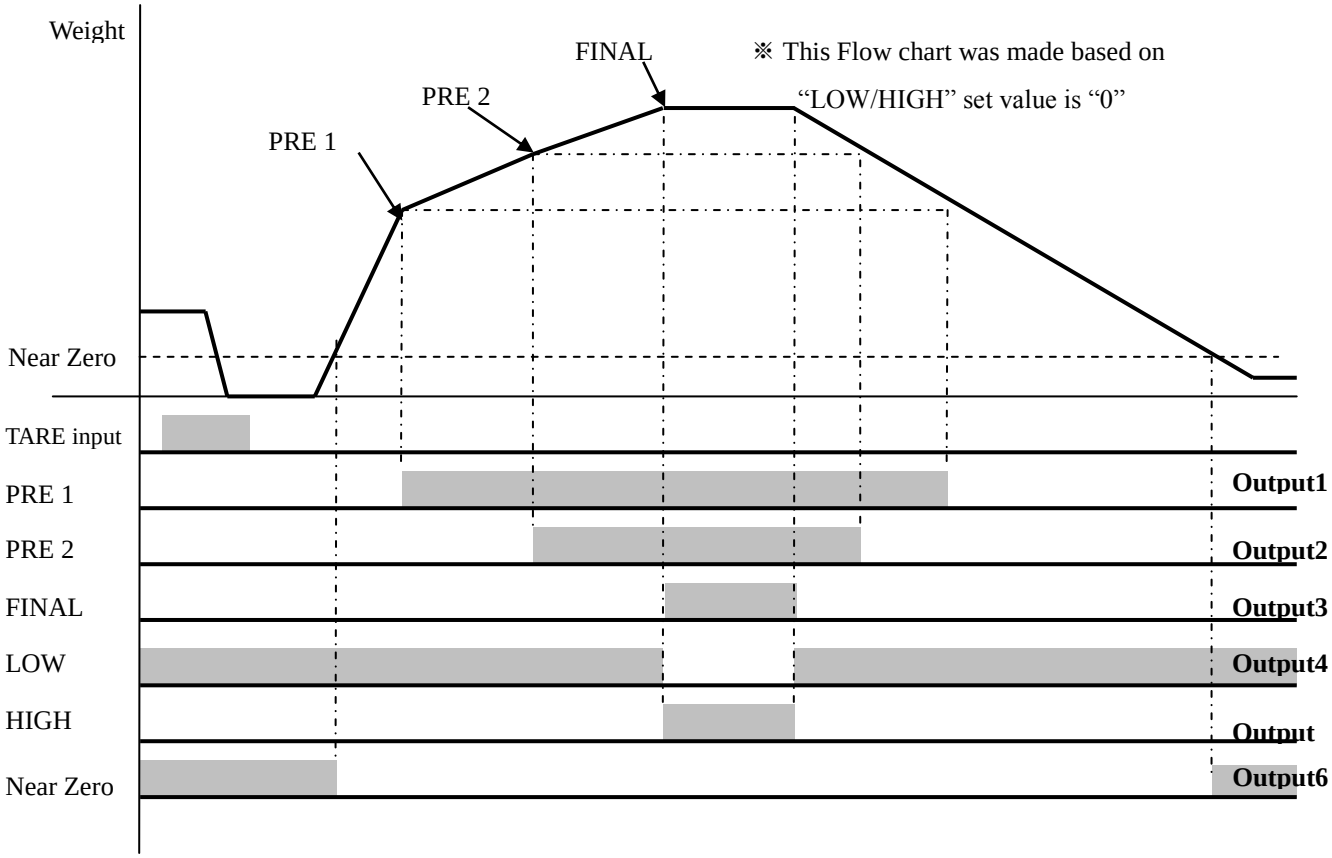
■ Relay Output Mode Setting

Automatic Free Fall Compensation setting			
F20	00	00 ∫ 05	This function is to compensate “Free fall” value during the weighing process. “00” setting : Automatic Free Fall Compensation function not use. “01~05” setting : Automatic Free Fall Compensation function use.
Weighing Mode selection			
F21	●	1	Limit Mode (Low / High relay)
		2	Packer Mode - (Finish / Error relay) - RUN key input → weighing start
		3	Loss-in Weight 1. (Low / High relay) - TARE key input → weighing start
		4	Loss-in Weight 2. (PRE1 : Feeding, PRE2, Free Fall : Discharge), (Low / High relay) - RUN key input→weighing start
		5	Loss-in Weight 3. (PRE1 : Feeding, PRE2, Free Fall : Discharge), (Low / High relay) - RUN key input →weighing start
		6	Loss-in Weight 4. (PRE1, PRE2 : Feeding, Free Fall : Discharge), (Finish / Error relay) - RUN key →weighing start
		7	Loss-in Weight 5. (PRE1, PRE2 : Feeding, Free Fall : Discharge), (Low/High relay) - RUN key input →weighing start

Relay output Mode(Each weighing Mode)

Weighing Mode		Output1	Output2	Output3	Output4	Output5	Output6
1	Limit Mode	PRE1	PRE2	PRE3	Low	High	Near Zero
2	Packer Mode	PRE1	PRE2	PRE3	Finish	Error	Near Zero
3	Loss-in Weight 1.	PRE1	PRE2	PRE3	Low	High	Near Zero
4	Loss-in Weight 2.	PRE1	PRE2	PRE3	Low	High	Near Zero
5	Loss-in Weight 3.	PRE1	PRE2	PRE3	Finish	Error	Near Zero
6	Loss-in Weight 4.	PRE1	PRE2	PRE3	Finish	Error	Near Zero
7	Loss-in Weight 5.	PRE1	PRE2	PRE3	Low	High	Near Zero

◆ Weighing Mode 1. Limit Mode (F21-01 setting) - No Finish Relay output.



1. Set value setting

FINAL(Target weight), PRE 1(Bulk), PRE 2(Drib), FREE FALL(Fall)

Setting conditions : (PRE 1 > PRE 2), (**PRE 1 < FINAL - FREE FALL)**

※ If the setting conditions are not satisfied, **"E"** symbol displayed and you can process the weighing.

2. Low / High output (LOW/HIGH value must be smaller than Max Capacity.)

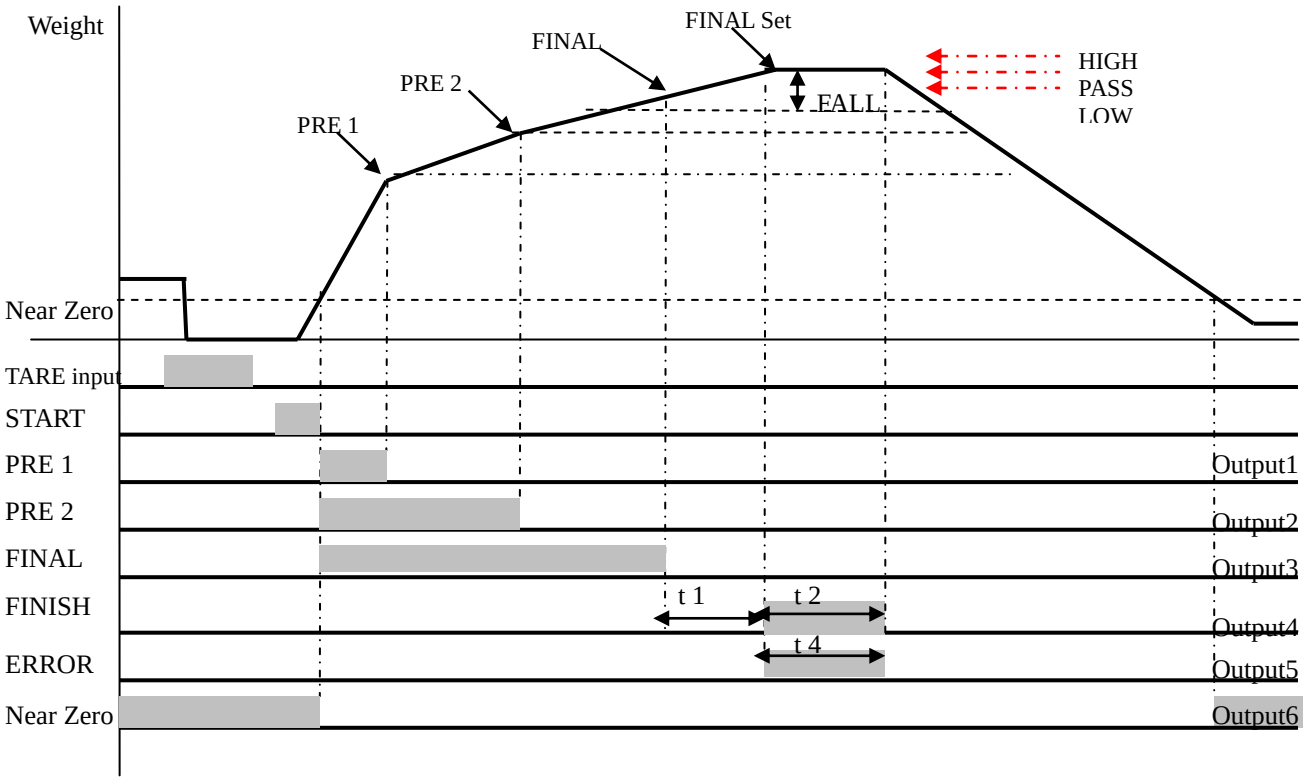
Under relay output : Relay output, when the current weight is less than (FINAL-LOW) value.

Over relay output : Relay output, when the current weight is more than (FINAL+HIGH) value.

3. Output Relay

Relay	Contents	Relay	Contents
PRE1	Current weight = PRE 1 (ON)	**Low**	Current weight < FINAL-LOW (ON)
PRE2	Current weight=PRE2(ON)	**High**	Current weight > FINAL+HIGH (ON)
FINAL	Current weight=FINAL(ON)	**Near Zero**	Within "EMPTY" range (ON)

◆ Weighing Mode 2. Packer Mode (F21-02 setting) - Finish / Error Relay output



1. Set value setting

FINAL(Target weight), PRE 1(Bulk), PRE 2(Drib), FREE FALL(Fall)

Setting conditions : (PRE 1 > PRE 2), **(PRE 1 < FINAL - FREE FALL)**

※ If the setting conditions are not satisfied, **"E"** symbol displayed and you can process the weighing.

2. Automatic Free Fall Compensation Function available : F-Function 20

3. Finish relay output delay time(t1) setting : F-Function 22

4. Finish relay output "ON" time(t2) setting : F-Function 23

5. Error relay output "ON" time(t4) setting : F-Function 27

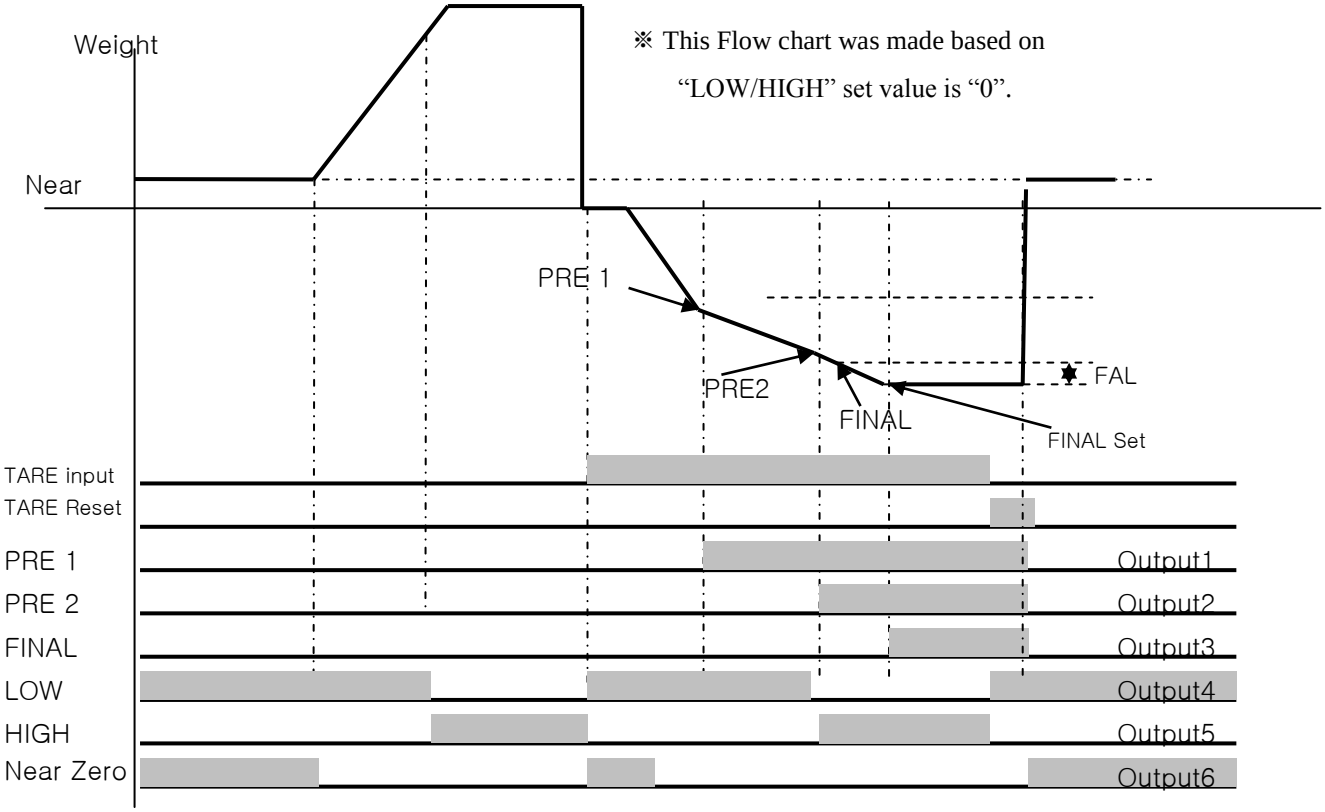
※ LOW/HIGH value must be smaller than Max Capacity

6. Relay Output

Relay	Contents	Relay	Contents
PRE1	RUN input : ON Current weight=PRE 1(OFF)	**Near Zero**	Within "EMPTY range"(ON)
PRE2	RUN input : ON Current weight=PRE 2(OFF)	**Error**	After "t1" time, during "t4" time(ON)
FINAL	RUN input : ON Current weight=FINAL(OFF)	**Finish**	After "t1" time, During "t2" time(ON)

◆ Weighing Mode 3. Loss-in Weight Mode 1.

(F21-03 setting) - No Finish/Error Relay output



1. Set value setting

FINAL(Discharge Target), PRE 1(Bulk Discharge), PRE 2(Drib Discharge), FREE FALL(Discharge fall)

Setting conditions : (PRE 1 > PRE 2), **(PRE 1 < FINAL - FREE FALL)**

※ If the setting conditions are not satisfied, **"E"** symbol displayed and you can process the weighing.

2. Automatic Free Fall Compensation Function available : F-Function 20

3. Low / High output (LOW/HIGH value must be smaller than Max Capacity.)

Under relay output : Relay output, when the current weight is less than (FINAL-LOW) value.

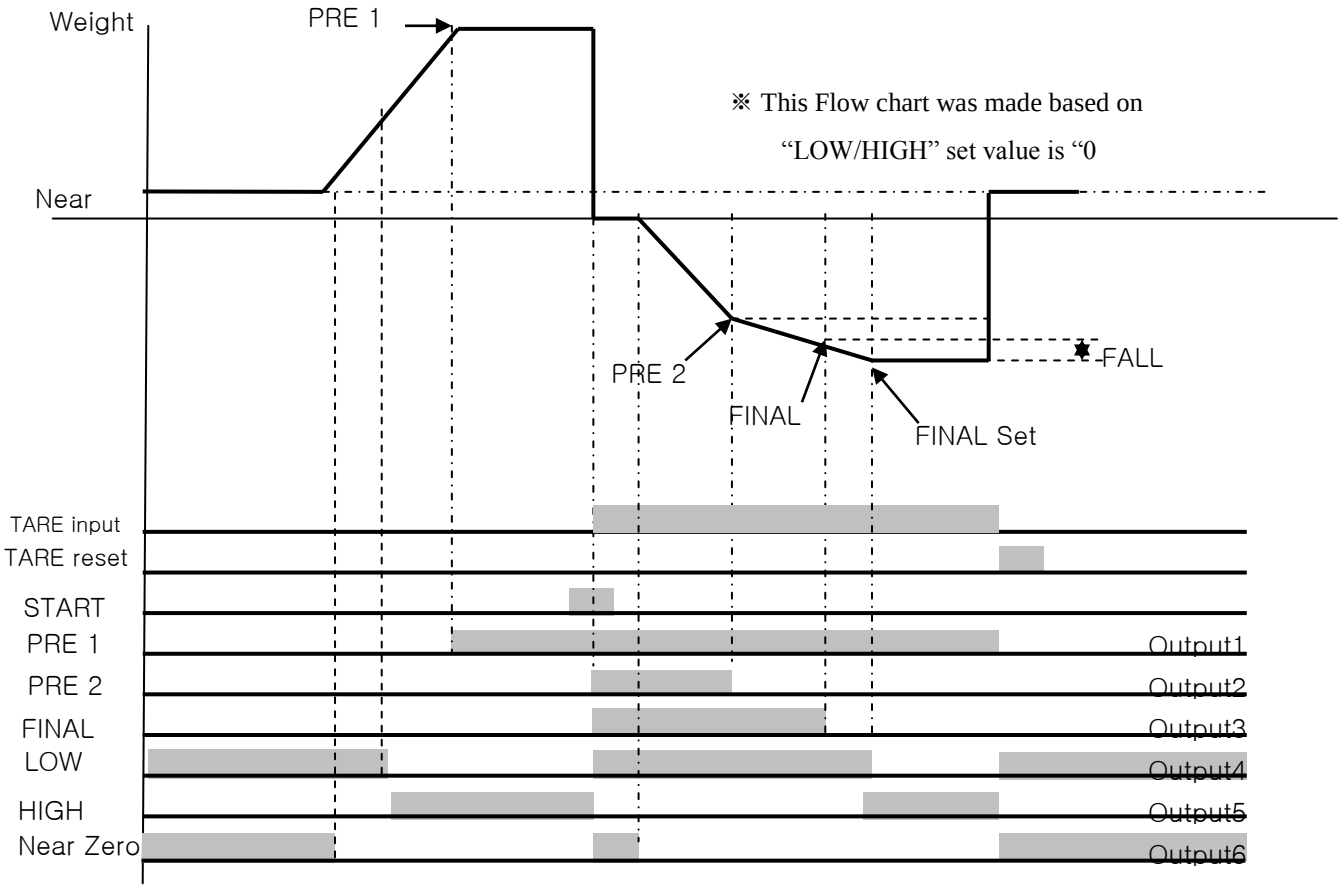
Over relay output : Relay output, when the current weight is more than (FINAL-HIGH) value.

4. Weighing Start : Tare key input→ weighing start, After Finish→automatic TARE RESET

5. Relay Output

Relay	Contents	Relay	Contents
PRE1	Current weight=PRE 1(ON) After Finish(OFF)	**Low**	Current weight < FINAL-LOW (ON)
PRE2	Current weight=PRE 2(ON) After Finish(OFF)	**High**	Current weight > FINAL-HIGH (ON)
FINAL	Current weight=FINAL(ON) After Finish(OFF)	**Near Zero**	Within "EMPTY range"(ON)

◆ Weighing Mode 4. Loss-in Weight Mode 2 - No Finish/Error Relay output



1. Set value setting

FINAL(Discharge Target), PRE 1(Feeding Target), PRE 2(Bulk Discharge), FREE FALL(Drib Discharge)

Setting conditions : (PRE 1 ≥ FINAL), (FINAL - Free Fall > PRE 2)

※ If the setting conditions are not satisfied, **"E"** symbol displayed and you can process the weighing.

2. Automatic Free Fall Compensation Function available : F-Function 20

3. Low / High output (LOW/HIGH value must be smaller than Max Capacity.)

Under relay output : Relay output, when the current weight is less than (FINAL-LOW) value.

Over relay output : Relay output, when the current weight is more than (FINAL-HIGH) value.

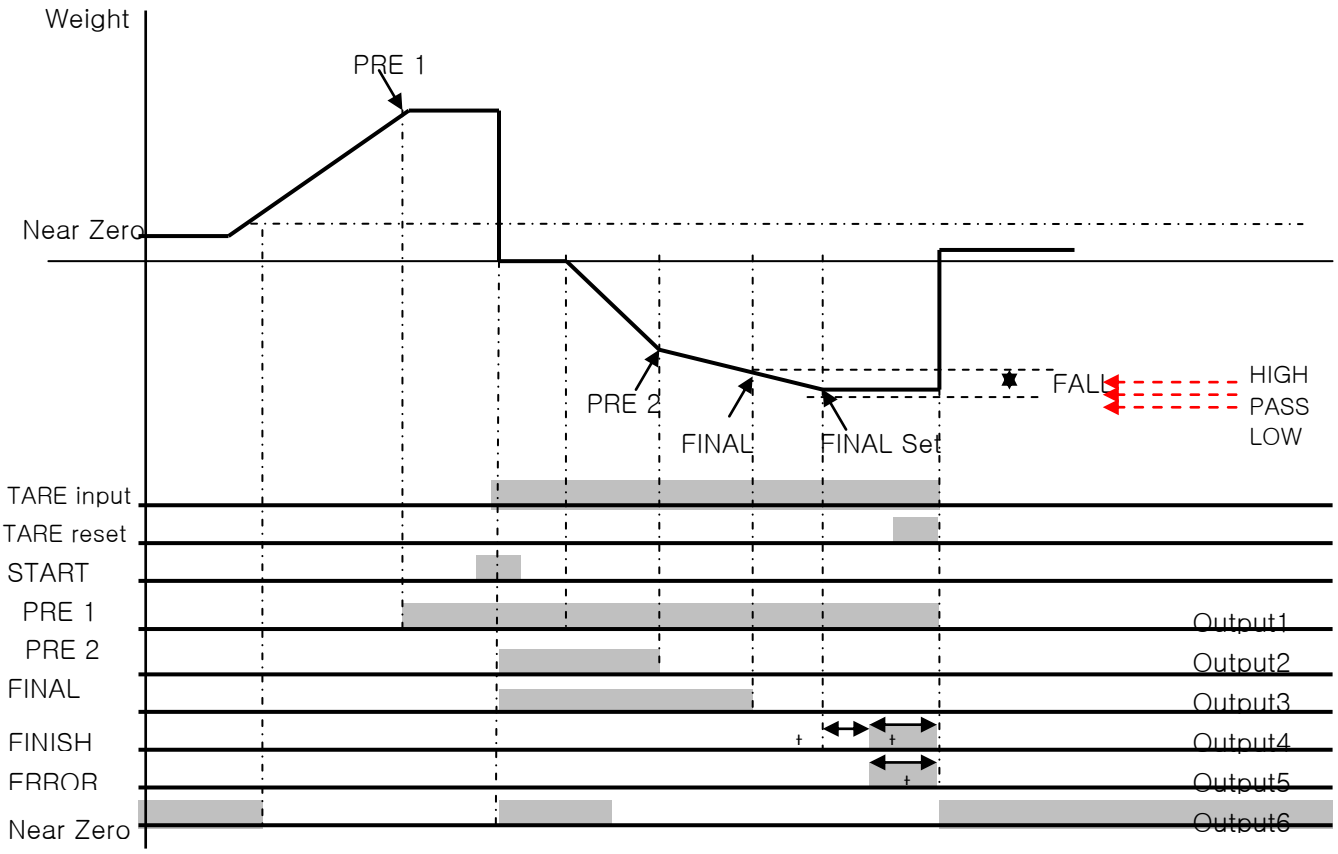
4. Weighing Start : Tare key input→ weighing start, After Finish→automatic TARE RESET

5. Manual Discharge : If the remained material is under "F29 set range", you can discharge with "F+RUN/STOP" key input.

6. Relay Output

Relay	Contents	Relay	Contents
PRE1	Current weight =PRE 1(ON) Under "F29 set range"(OFF)	**Low**	Current weight < FINAL-LOW (ON)
PRE2	Current weight=PRE 2(ON) After Finish(OFF)	**High**	Current weight > FINAL-HIGH (ON)
FINAL	Current weight=FINAL(ON) After Finish(OFF)	**Near Zero**	Within "EMPTY range"(ON)

◆ Weighing Mode 5.. Loss-in Weight Mode 2) - Finish / Error Relay output

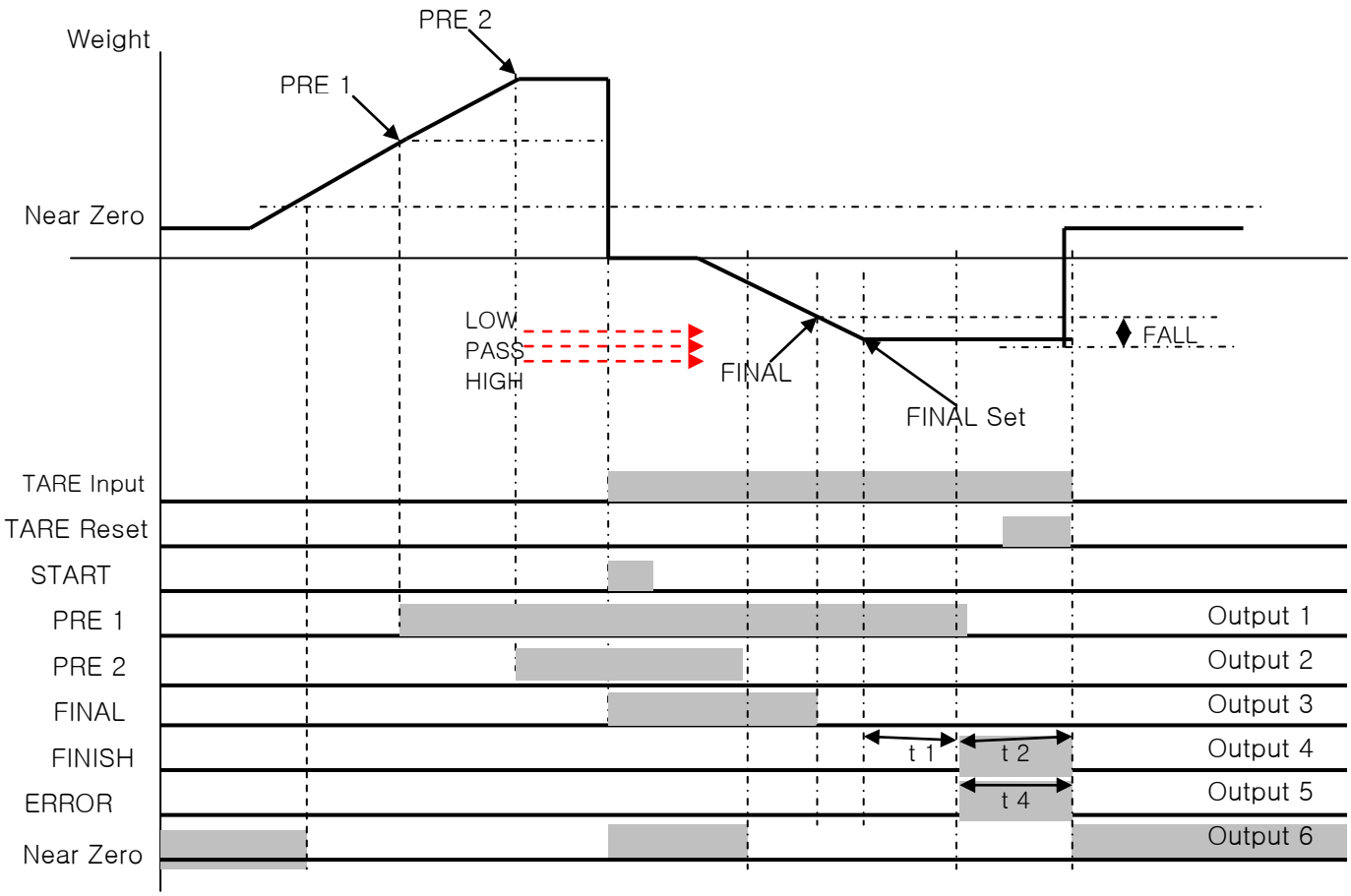


1. Set value setting

FINAL(Discharge Target), PRE 1(Feeding Target), PRE 2(Bulk Discharge), FREE FALL(Drib Discharge)
Setting conditions : (PRE 1 ≥ FINAL), (FINAL - Free Fall > PRE 2)
※ If the setting conditions are not satisfied, **"E"** symbol displayed and you can process the weighing.
2. Automatic Free Fall Compensation Function available : F-Function 20
3. Weighing Start : RUN key input→ Auto TARE, weighing start, After Finish→automatic TARE RESET
4. Manual Discharge : If the remained material is under "F29 set range", you can discharge with "F+RUN/STOP" key input.
5. Finish relay output delay time(t1) setting : F-Function 22
6. Finish relay output "ON" time(t2) setting : F-Function 23
7. Error relay output "ON" time(t4) setting : F-Function 28
※ LOW/HIGH value must be smaller than Max Capacity
8. Relay Output

Relay	Contents	Relay	Contents
PRE1	Current weight=PRE 1(ON) Under "F29 set range"(OFF)	**Near Zero**	Within "EMPTY range" (ON)
PRE2	RUN input (ON) Current weight=PRE2(OFF)	**Error**	After "t1" time, during "t4" time(ON)
FINAL	RUN input(ON) Current weight=FINAL(OFF)	**Finish**	After "t1" time, During "t2" time(ON)

◆ Weighing Mode 6. Loss-in Weight 3. - Finish / Error Relay output



1. Set value setting

FINAL(Discharge Target), PRE 1(Bulk), PRE 2(Feeding Target), FREE FALL(Bulk discharge)

Setting conditions : (PRE 2 ≥ PRE 1), (PRE1 ≥ FINAL - Free Fall)

※ If the setting conditions are not satisfied, **"E"** symbol displayed and you can process the weighing.

2. Automatic Free Fall Compensation Function available : F-Function 20

3. Weighing Start : RUN key input→ Auto TARE, weighing start, After Finish→automatic TARE RESET

4. Manual Discharge : If the remained material is under "F29 set range", you can discharge with "F+RUN/STOP" key input.

5. Finish relay output delay time(t1) setting : F-Function 22

6. Finish relay output "ON" time(t2) setting : F-Function 23

7. Error relay output "ON" time(t4) setting : F-Function 28

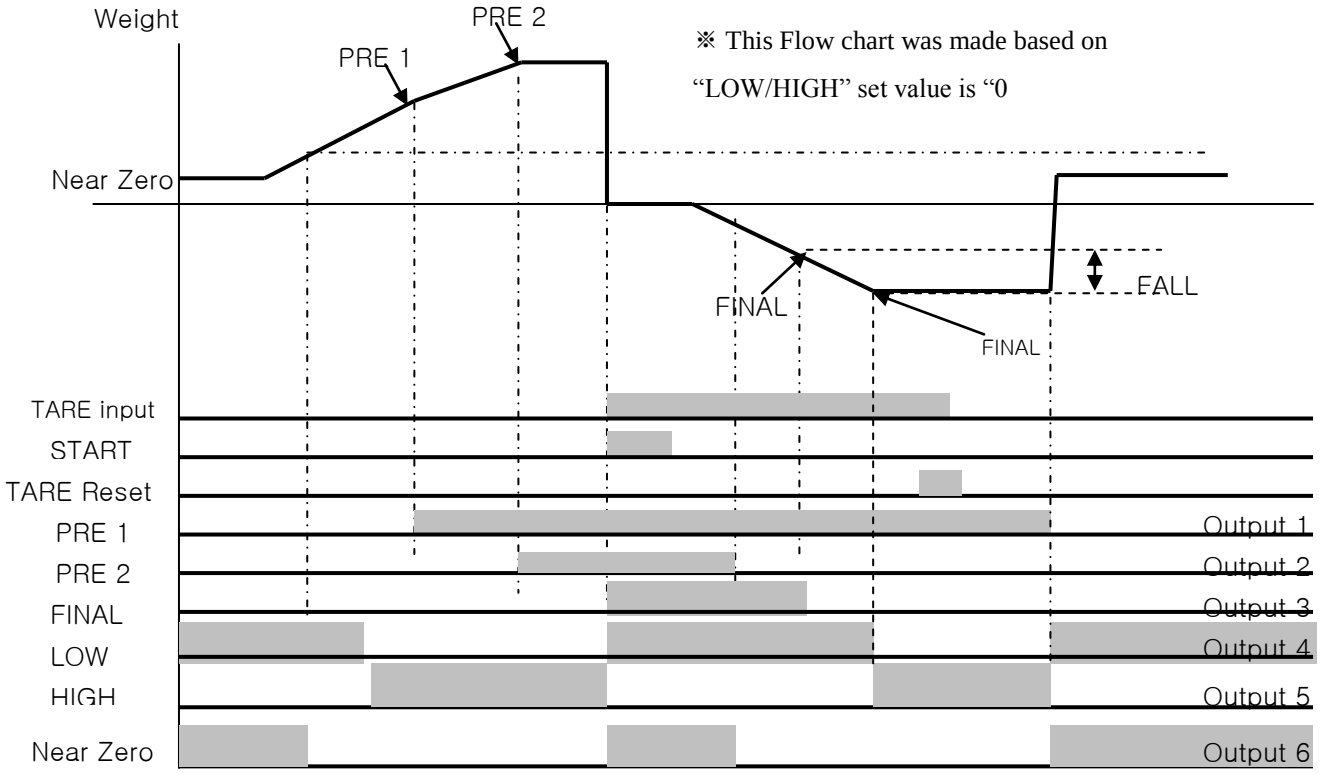
※ LOW/HIGH value must be smaller than Max Capacity

8. Relay Output

Relay	Contents	Relay	Contents
PRE1	Current weight=PRE 1(ON) Under "F29 set range"(OFF)	**Near Zero**	Within "EMPTY range" (ON)
PRE2	Current weight=PRE 2(ON) Current weight<PRE 2(OFF)	**Error**	After "t1" time, during "t4" time(ON)
FINAL	RUN key input (ON) Current weight=FINAL(OFF)	**Finish**	After "t1" time, During "t2" time(ON)

◆ Weighing Mode 7. Loss-in Weight 4. (2step Feeding, 1step discharge, F21-07 setting)

- No Finish/Error Relay output



1. Set value setting

FINAL(Discharge Target), PRE 1(Bulk), PRE 2(Feeding Target), FREE FALL(Bulk discharge)

Setting conditions : (PRE 2 ≥ PRE 1), (PRE1 ≥ FINAL - Free Fall)

※ If the setting conditions are not satisfied, **"E"** symbol displayed and you can process the weighing.

2. Automatic Free Fall Compensation Function available : F-Function 20

3. Low / High output (LOW/HIGH value must be smaller than Max Capacity.)

Under relay output : Relay output, when the current weight is less than (FINAL-LOW) value.

Over relay output : Relay output, when the current weight is more than (FINAL-HIGH) value.

4. Weighing Start : RUN key input→ Auto TARE, weighing start, After Finish→automatic TARE RESET

5. Manual Discharge : If the remained material is under "F29 set range", you can discharge with "F+RUN/STOP" key input.

6. Relay Output

Relay	Contents	Relay	Contents
PRE1	Current weight=PRE 1(ON) Under "F29 set range"(OFF)	**Low**	Current weight < FINAL-LOW (ON)
PRE2	Current weight =PRE 2(ON) Current weight < PRE2(OFF)	**High**	Current weight > FINAL-HIGH (ON)
FINAL	RUN key input(ON) Current weight=FINAL(OFF)	**Near Zero**	Within "EMPTY range" (ON)

"FINISH Relay" delay time(t1) setting (Under F01, 05, 06 setting)			
F22	10	00 ∫ 99	After current weight is reached to FINAL, you can set some delay time of "FINISH relay ON time. "00" setting : At Steady point, FINISH relay output "20" setting : After 2.0sec from Steady point, FINISH relay output "99" setting : After 9.9sec from Steady point, FINISH relay output
FINISH Relay "ON" time(t2) setting (Under F21-01, 05, 06 setting)			
F23	10	01 ∫ 99	You can set duration time for FINISH relay. "01" setting : FINISH relay will be "ON during 0.1sec. "20" setting : FINISH relay will be "ON" during 2.0sec.
..ERROR Relay "ON" time(t4) setting (Under F21-01, 05, 06 setting)			
F27	10	01 ∫ 99	You can set duration time for Error relay "01" setting : ERROR relay will be "ON during 0.1sec. "20" setting : ERROR relay will be "ON" during 2.0sec.
Manual Discharge selection (Under F21-04, 05, 06, 07 setting)			
F28	●	0	Manual Discharge Not Use.
		1	Manual Discharge Use. (If you press "F" + "RUN/STOP" key, discharge gate will be open during 5sec.)
PRE1 Relay "ON" range selection (Under F21-04, 05, 06 setting)			
F29		0	When PRE1 set value is under 120% of FINAL value, SP1 relay OFF
		1	When PRE1 set value is under 110% of FINAL value, SP1 relay OFF
		2	When PRE1 set value is under 105% of FINAL value, SP1 relay OFF
	●	3	When PRE1 set value is under 100% of FINAL value, SP1 relay OFF
		4	When PRE1 set value is under 95% of FINAL value, SP1 relay OFF
		5	When PRE1 set value is under 90% of FINAL value, SP1 relay OFF
		6	When PRE1 set value is under 85% of FINAL value, SP1 relay OFF
		7	When PRE1 set value is under 80% of FINAL value, SP1 relay OFF
		8	When PRE1 set value is under 75% of FINAL value, SP1 relay OFF
		9	When PRE1 set value is under 70% of FINAL value, SP1 relay OFF

■ Communication Mode setting (Serial Port 1. - Standard installed port)

Parity Bit selection Mode					
F30	●	0	DATA bit (8bit)	STOP bit (1bit)	Parity bit (Non)
		1	DATA bit (7bit)	STOP bit (2bit)	Parity bit (Non)
		2	DATA bit (7bit)	STOP bit (1bit)	Parity bit (Even)
		3	DATA bit (7bit)	STOP bit (1bit)	Parity bit (Odd)
		4	DATA bit (8bit)	STOP bit (2bit)	Parity bit (Non)
		5	DATA bit (8bit)	STOP bit (1bit)	Parity bit (Even)
		6	DATA bit (8bit)	STOP bit (1bit)	Parity bit (Odd)

Serial Communication Speed selection						
F31		0	2,400bps		5	28,800bps
		1	4,800bps		6	38,400bps
	●	2	9,600bps		7	57,600bps
		3	14,400bps		8	76,800bps
		4	19,200bps		9	115,200bps

DATA Transference Method selection			
F32	●	0	Simplex Mode / Stream Mode
		1	Duplex Mode / Command Mode

Print port selection (Under F32-01 setting, only)			
F33	●	0	Same port as using for Command Mode.
		1	The other port.

“Check-Sum” detection selection (Under F32-01 setting, only)			
F34	●	0	Check-Sum data will not be included on transferred data.
		1	Check-Sum data will be included on transferred data.

Serial Port Application Selection (Under F32-00 setting, only)			
F35	●	0	DATA Transference purpose
		1	Printing purpose (Serial Printer)

DATA Transference Mode selection (Under F32-00, F35-00 setting, only)			
F36	●	0	Stream Mode : Weighing Data will be transferred continuously.
		1	Finish Mode : When Finish Relay output, only 1 time transferred.
		2	Manual Mode : When “Print” key input, 1 time transferred.

DATA Transference Format selection(Under F32-00, F35-00 setting, only)			
F37	●	0	Format 1.
		1	Format 2. (Format 1 + ID No.)
		2	CAS Format
		3	AND Format

Print Mode selection (Under F32-00, F35-01 setting, only)			
F38	●	0	Manual Print : Whenever “Print” key input.
		1	Auto Print : When Finish relay output, automatically print.

Transferring DATA Byte selection			
F40	●	0	7 Byte data Transfer

		1	8 Byte data Transfer

■ Print Mode Setting (These settings will be apply to Serial and Parallel print)

Weight Unit selection			
F41	●	0	kg
		1	g
		2	t
Print Format selection (If you install on Standard Serial Port)			
F42	●	0	**Continuous Print -** Serial No. and Weight will be printed continuously.
		1	**Single Print -** Date, Time, S/N, ID No. Weighing Data will be print
Print Format selection (If you install on Optional Serial Port)			
F43	●	0	**Continuous Print** Serial No. and Weight will be printed continuously.
		1	**Single Print** Date, Time, S/N, ID No. Weighing Data will be print
SUB/GRAND Total Data Delete selection			
F44	●	0	**Manual Delete Mode** SUN Total Delete : "Clear" key + "P/N" key GRAND Total Delete : "Clear" key + "S/N" key
		1	**Automatic Delete Mode** After SUB/GRAND Total Print, Automatically Deleted.
Paper Withdraw Rate setting (After SUB/GRAND Total Print)			
F45	03	00~09	Whenever set value increased, 1line will be added.
Paper Withdraw Rate setting (After Continuous/Single Print)			
F46	03	00~09	Whenever set value increased, 1line will be added.
Printing Language Selection (If you install on Standard Serial Port)			
F47	●	0	KOREAN
		1	ENGLISH
Printing Language Selection (If you install on Optional Serial Port)			
F48		0	KOREAN
	●	1	ENGLISH
Minus(-) symbol Print selection			
F49	●	0	Print minus(-) symbol, if the weight is minus(-).
		1	Ignore minus(-) symbol
Parallel Print Port selection			
F50	●	0	Parallel Port is not installed.

		1	Share Standard Serial Port.
		2	Share Optional Serial Port.
Function / Clear key Activation display selection			
F51		0	Activation display not use
	●	1	Activation display use
Communication Interval Setting			
F52	●	0	Fast Speed (The interval is short)
		1	Low Speed (The interval is long)

■ Other Setting

※ Under "Other setting mode", you can not move to other function directly.

Press 

key and move to F01 and move to other function No. directly.

EMPTY Range setting		
F80	X.X.X.X.X.X. (0.0.0.0.1.0)	You can set "EMPTY" Range. Within set range, indicator will not display current weight and just display "Zero". "0.000" setting : When Net Zero, "Zero" status lamp and Near Zero relay will be output. "0.190" setting : Within 190, "Zero" Status lamp and Near Zero relay will be output.
SPAN Calibration Value Check		
F89	X.X.X.X.X.X.	**Span Calibration Value Check** Under F-function mode, enter " 

", " 

" key and press " 

".
After checking the value and press " 

" to exit

※ If you have difficulty to process Calibration again, the best way to matching the net weight and display weight is doing Calibration process once again. |
DATE Check / Change		
F90	Check Current DATE data or you can Change to new date	
TIME check / Change		
F91	Check Current TIME data or you can Change to new date	
Program & Hard ware Version Check		
F98	Check the Program & Hard ware version (H/W : X.XX, S/W : X.XX.X)	
Production DATE Check		
F99	Check the Product's Production Year and Month.	

■ Communication Mode setting (Serial Port 2. - Optional Serial port)

This setting will be activated only when "Optional Serial Port" is installed.

Parity Bit selection Mode						
F60	●	0	No Parity			
		1	Odd Parity			
		2	Even Parity			
Serial Communication Speed selection						
F61		0	2,400bps		5	28,800bps
		1	4,800bps		6	38,400bps
	●	2	9,600bps		7	57,600bps
		3	14,400bps		8	76,800bps
		4	19,200bps		9	115,200bps
DATA Transference Method selection						
F62	●	0	Simplex Mode / Stream Mode			
		1	Duplex Mode / Command Mode			
Print port selection (Under F62-01 setting, only)						
F63	●	0	Same port as using for Command Mode.			
		1	The other port.			
"Check-Sum" detection selection (Under F62-01 setting, only)						
F64	●	0	Check-Sum data will not be included on transferred data.			
		1	Check-Sum data will be included on transferred data.			
Serial Port Application Selection (Under F62-00 setting, only)						
F65	●	0	DATA Transference purpose			
		1	Printing purpose (Serial Printer)			
DATA Transference Mode selection (Under F62-00, F65-00 setting, only)						
F66	●	0	Stream Mode : Weighing Data will be transferred continuously.			
		1	Finish Mode : When Finish Relay output, only 1 time transferred.			
		2	Manual Mode : When "Print" key input, 1 time transferred.			
DATA Transference Format selection(Under F62-00, F65-00 setting, only)						
F67	●	0	Format 1.			
		1	Format 2. (Format 1 + ID No.)			
		2	CAS Format			
Print Mode selection (Under F62-00, F65-01 setting, only)						
F68	●	0	Manual Print : Whenever "Print" key input.			
		1	Auto Print : When Finish relay output, automatically print.			

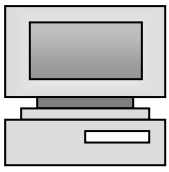
6. INTERFACE

6-1. Serial Interface (RS-232C)

RS-232C Serial Interface is sensitive/weak for electric Noise.

So, please isolate with AC power cable and use shield cable to reduce the electric noise effect.

6-1-1. Communication with PC(Personal Computer) or Other devices



Personal Computer
(9pins Standard)

2 : RxD TxD : 3

3 : TxD RxD : 2

5 : SG SG : 5

SI 4410

6-1-2 Connection with External Display or other devices

SE 6125
(External Display)

1 : RxD TxD : 3

2 : GND GND : 5

SI 4410

6-1-3. Signal Format

① Type : EIA-RS-232C

② Communication Method : Half-Duplex, Full Duplex, Asynchronous

③ Serial Baud Rate : Selectable on **"F-function31"**

④ Data Bit : 8(No Parity mode, only)Bit – **Refer "F30"**.

⑤ Stop Bit : 1

⑥ Parity Bit : Non, Even, Odd (Selectable on "F-function 30") - **Refer "F30"**

⑦ Code : ASCII

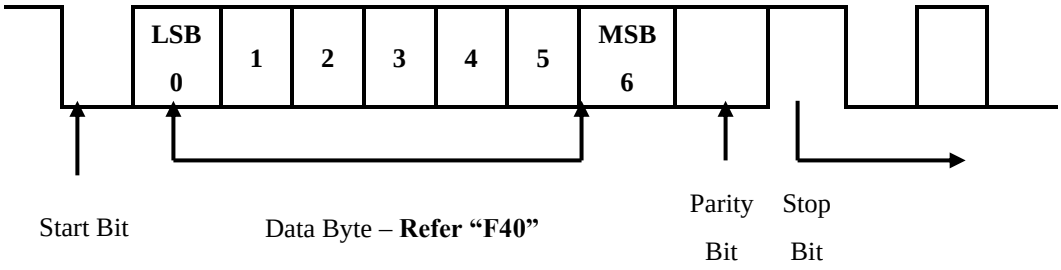
STX 02H

ETX 03H

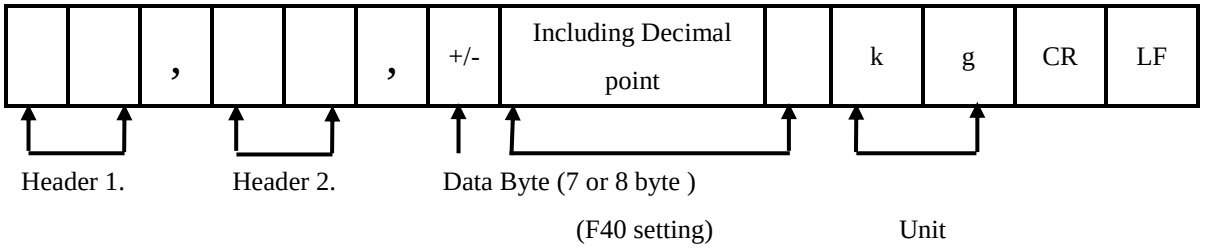
CR 0DH

LF 0AH

⑧ Check-Sum (Error Detecting, "F-Function 36")



6-1-4. Data Format(1) : ID Number will not be transferred. (Refer "F-function 37")



① Header 1. : OL : Over Load, Under Load

ST : Display weight "Steady"

US : Display "Un-Steady"

② Header 2. : NT : Net-Weight

GS : Net-Weight, under TARE

③ Data Bit(Number) 2B(H) : "+" Plus

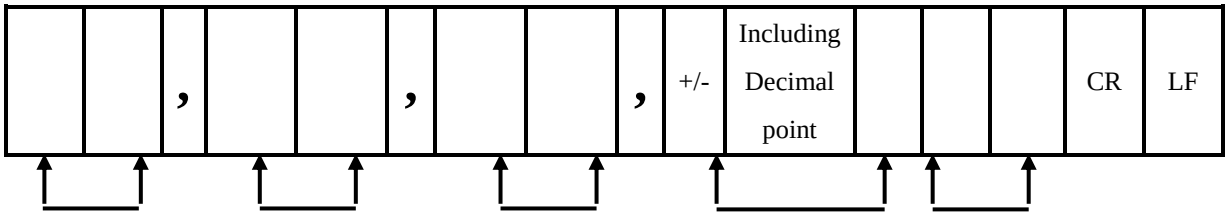
2D(H) : "-" Minus

2D(H) : " " Space

2E(H) : "." Decimal Point

④ Unit : kg, g, t

6-1-5. Data Format(2) : ID Number + Data Transference (Refer "F-function 18, 37)



①. Header 1. : OL : Over Load, Under Load

ST : Display "Steady"

US : Display “Un-Steady”

②. Header 2. : NT : Net-Weight

GS : Net-Weight, under TARE.

③. Data Bit(Number) 2B(H) : “+” Plus

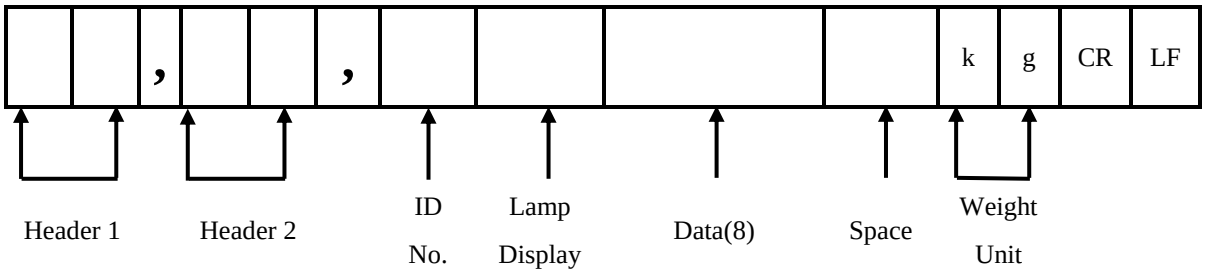
2D(H) : “-“ Minus

2D(H) : “ “ Space

2E(H) : “.” Decimal Point

④. Unit : kg, g, t

6-1-6. Data Format(3) : CAS “CI5101A” Data Transference) – CAS 22byte Format



① Header 1. : OL : Over Load, Under Load

ST : Display “Steady”

US : Display “Un-Steady”

② Header 2. : NT : Net-Weight

GS : Net-Weight, under TARE.

③ Lamp Display : Current Lamp Condition (ON/Off Data)

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	Steady	1	Hold	Print	Gross Weight	Tare	Zero

④ Data Bit(Number) 2B(H) : “+” Plus

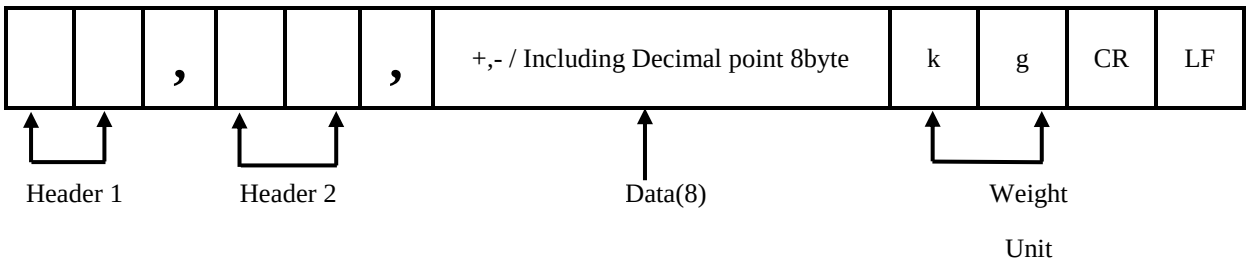
2D(H) : “-“ Minus

2D(H) : “ “ Space

2E(H) : “.” Decimal Point

⑤ Unit : kg, g, t

6-1-7. Data Format : AD – 4321 Data Transference) – AD – 4321 18byte Format



① Header 1. : OL : Over Load, Under Load

ST : Display “Steady”

US : Display “Un-Steady”

② Header 2. : NT : Net weight (Under Tare)

GS : Net weight (Under TARE reset)

③ Data Bit(Number) 2B(H) : “+” Plus

2D(H) : “-“ Minus

20(H) : “ “ Space

2E(H) : “.” Decimal Point

④ Unit : Kg, g, t

6-2. Current Loop Interface

"Current Loop" Interface is stronger for Electric Noise than "RS-232C" interface.

So, it can be used for long distance communication.(About 100m long distance).

※ Current Loop Interface supports, up to 9,600 Communication Speed, only.

6-2-1. Signal Format

As same as "RS-232C" Interface

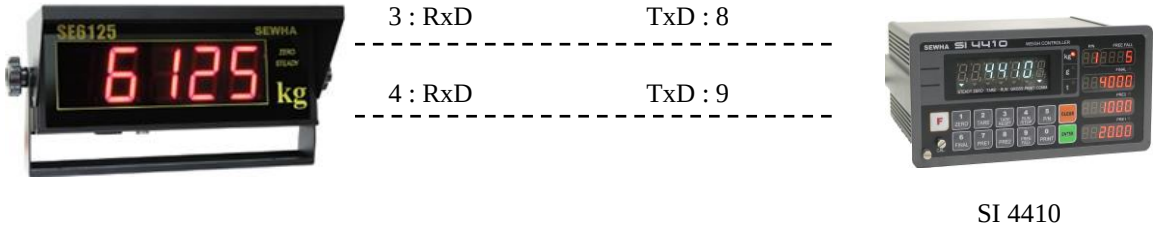
1	20mA
0	0mA

※ Only this power part is different.

6-2-2. Data Format

As same as "RS-232C" Interface

6-2-3. Communication with Other Devices (Remote Display / External Display)

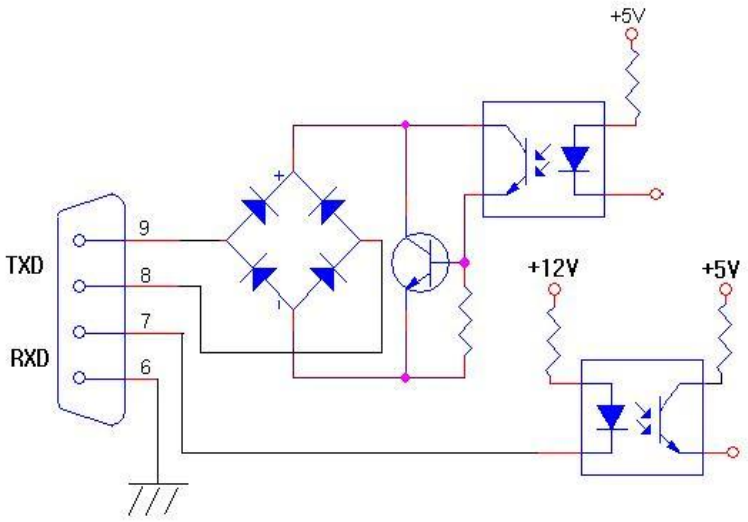


Remote Display

(External Display)

SI 4410

6-2-4. Current Loop Circuit



6-3. Print Interface (Option 01 : Centronics Parallel Interface)

This Print Interface Option is based on "Centronics Parallel Interface", so this print interface can be connected other printers using this communication method.

But, the print format is programmed based on our "SE7300", and "SE7320" Industrial Printers, so you had better to use these printer for convenience.

6-3-1. Connector Wire Connection

Pin	Signal	Contents	RE
1	STROBE	STROBE signal	out
2	DATA0	Data(bit0) signal	out
3	DATA1	Data(bit1) signal	out
4	DATA2	Data(bit2) signal	out
5	DATA3	Data(bit3) signal	out
6	DATA4	Data(bit4) signal	out
7	DATA5	Data(bit5) signal	out
8	DATA6	Data(bit6) signal	out
9	DATA7	Data(bit7) signal	out
10	ACK	Data Response	In
11	BUSY	Busy signal	In
12,13	N.C		

Pin	Signal	Contents	RE
14	N.C		
15	N.C		
16	N.C		
17	N.C		
18	GND	GROUND	out
19	GND	GROUND	out
20		GROUND	out
21		GROUND	out
22		GROUND	out
23		GROUND	out
24		GROUND	out
25	GND	GROUND	out

6-3-2. Print Format (English)

Single Print Format

```
DATE : 2006-10-15
TIME : 10:20:30
ID_N   PART SERIAL WEIGHT
 01     10     33   + 1.000 kg

DATE : 2006-10-15
TIME : 10:21:30
ID_N   PART SERIAL WEIGHT
 01     10     34   + 1.000 kg
```

Continuous Print format

```
Date : 2006-10-15
Time : 10:20:30
ID_N   PART SERIAL WEIGHT
 01     10     33   + 1.000 kg
 01     10     34   + 1.000 kg
 01     10     35   + 1.000 kg
 01     10     36   + 1.000 kg
 01     10     36   + 1.000 kg
```

Sub-Total Print Format

```
          SUB-TOTAL

DATE :          2006-10-15
TIME :            10:30:30
ID_N :                  01
PART:                   10

T-COUNT :                2
T-WEIGHT :       2.000kg
```

Grand-Total Print Format

```
          GRD-TOTAL

DATE :          2006-10-15
TIME :            10:40:30
ID_N :                  01

PART   SERIAL      WEIGHT
 10         2      2.000kg

T-PART :                 1
T-COUNT :                2
T-WEIGHT :       2.000kg
```

6-4. Analog Output Interface (Option 02 : 0~10V Output)

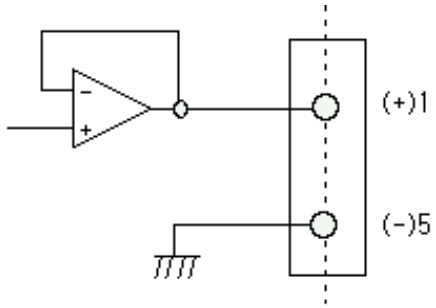
This Option card converts weight value to Analog Voltage output(0~10V) and transfers to external devices(Recorder, P.L.C), controlled by voltage output.

6-4-1. Specification

①. Output Voltage : 0~10V DC output

②. Accuracy : More than 1/1,000

6-4-2. Circuit



※ This Voltage output is proportioned on weight calibration and outputs 0~10V.

6-4-3. Output Adjustment

① This output is adjusted as when the weight is “Zero”, output is 0V and When the weight is “Full capacity”, output is 10V.

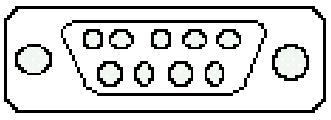
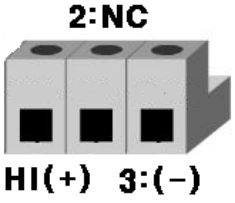
② If you need additional adjustment, please adjust with “VR1(Zero)”, “VR2(Span) on the Analog Output PCB.

※ Remark

This Analog option card converts Displayed weight value(Micro-process data) to analog value on D/A Converter(Digital to Analog converter)

This D/A Converter has Max 1/4,000 accuracy, so this output is not suitable for high accuracy application, like more than 1/3,000.

6-4-4. Connecter (9pin, “D-type” female)

9 pin D-type connector(Female)	Terminal Block (3 pin)
 1 : HI(+), 5 : (-)	

※ For 0~5VDC or 1~5VDC analog output, please inform when you inquiry.

6-5. Analog Output Interface (Option 03 : 4~20mA Output)

This Option card converts weight value to Analog Electric Current output(4~20mA) and transfers to external devices(Recorder, P.L.C), controlled by electric current output.

6-5-1. Specification

①. Output Current : 4~20mA (Output Range : 2~22mA)

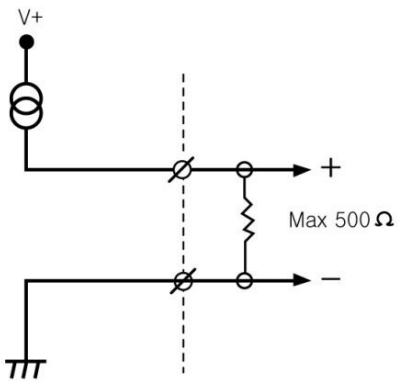
②. Accuracy : More than 1/1,000

③. Temperature Co-efficiency : 0.01%℃

④. Max Loaded Impedance : Max 500Ω

※ When Weight display is "Zero", 4mA current will be output, when Weight display is "Full Capacity", 20mA current will be output.

6-5-2. Circuit



※ "LO" terminal is not a "GND", so this "LO" terminal do not be connected with other "GND" terminal on other devices.

6-5-3. Output Adjustment

①. This output is adjusted as when the weight is "Zero", output is "4mA" and When the weight is "Full capacity", output is "20mA".

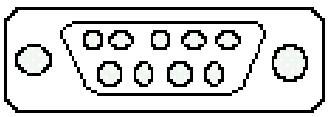
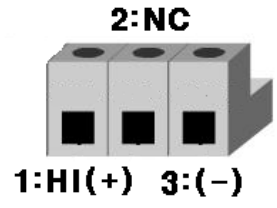
②. If you need additional adjustment, please adjust with "VR1(Zero)", "VR2(Span) on the Analog Output PCB.

※ Remark

This Analog option card converts Displayed weight value(Micro-process data) to analog value on D/A Converter(Digital to Analog converter)

This D/A Converter has Max 1/4,000 accuracy, so this output is not suitable for high accuracy application, like more than 1/3,000.

6-5-4. Connecter (9pin, "D-type" female)

9 pin D-type connector(Female)	Terminal Block (3 pin)
 1 : HI(+), 5 : (-)	

6-6. Serial Interface (option 04 : RS-232C/422/485)

RS-422/485 serial interface is more stable for electric noise effect compare with other communication method, using electric current difference.

But, install isolated place from Power cable or other electric cables and wires, and please use shielded cable for better performance.

Recommendable communication distance is about 1.2km.

If you install additional RS-232C interface, please refer "6-1. Serial Interface" section.

6-6-1. Signal Format

①. Type : RS-422/485

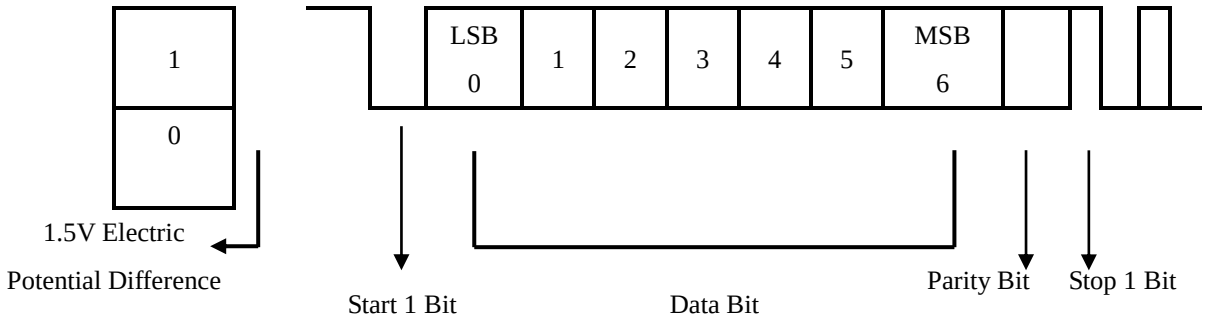
②. Format : Baud Rate : Refer "F-function 31".

Data Bit : 7 or 8(No Parity)

Stop : 1

Parity Bit : Even, Odd, No Parity (Selectable)

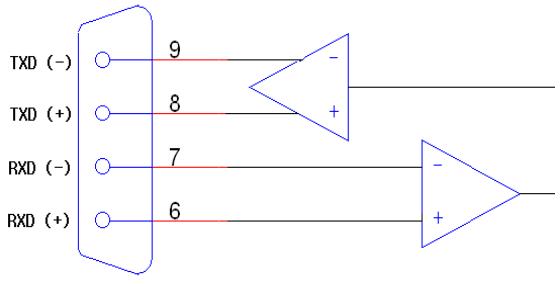
Code : ASCII (STX 02H, ETX 03H, CR 0DH, LF 0AH)



6-6-2. Data Format

Same as RS-232C (Refer "6-1. Serial Interface")

6-6-3. RS-485 Circuit (In case of RS-485, only Use No6 and 7 pin)

D-SUB 9 pin In case of RS -232 : "6-1. Refer to Serial Interface " In case of RS-485 : only Use No6 and 7 pin	**Terminal Block**
	

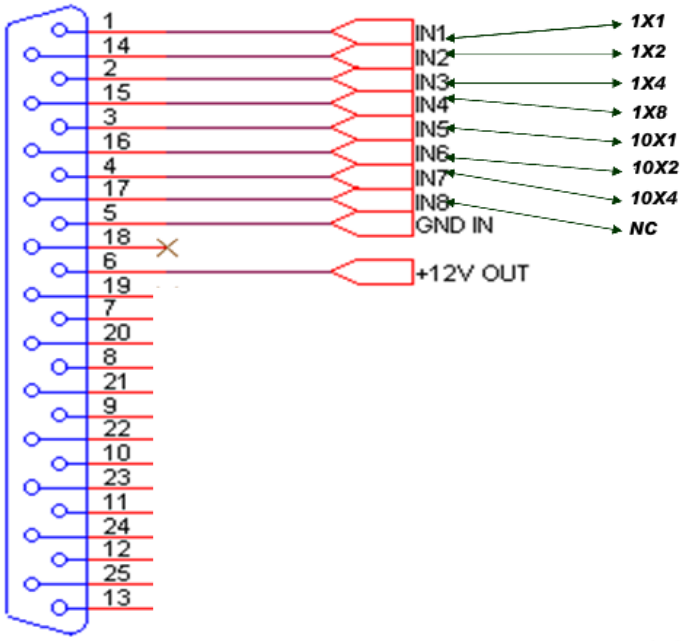
Terminal Block	1	2	3	4
RS-232	TX	RX	GND	GND
RS-485	RTX+	RTX-	NC	NC
RS-422	RXD+	RXD-	TXD+	TXD-

6-7. BCD Input (Option 05) – Input for Part No. selection.

This “BCD interface” option card can be applied on PLC (Programmable Logic Controller), or Score Board applications.

Each Input circuit is isolated with “Photo-Coupler”, from external devices electrically.

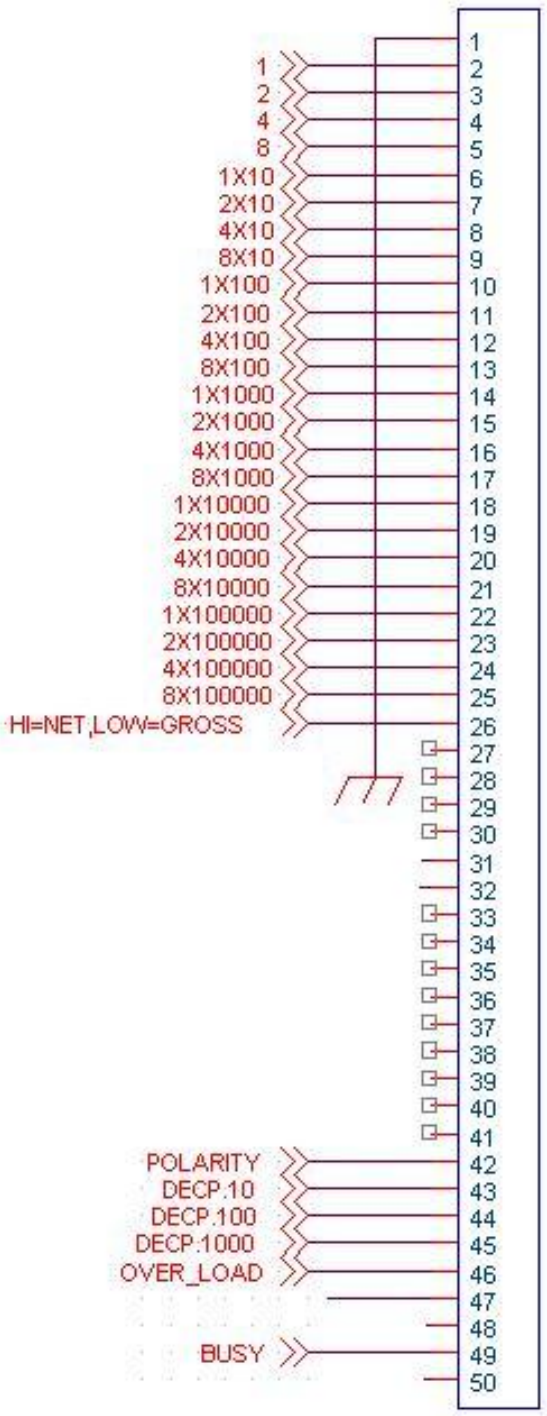
Wire Connection Diagram

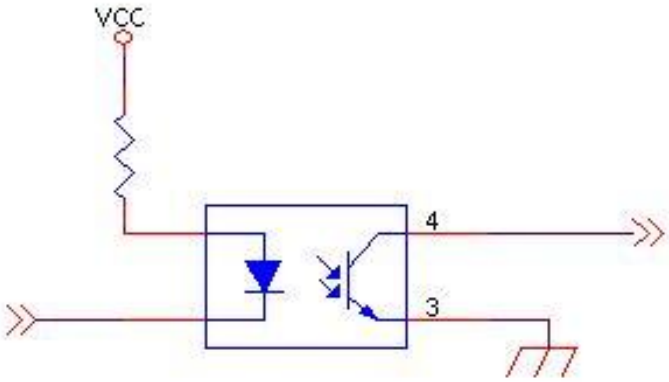


6-8. BCD Output Interface(Option 06)

This “BCD interface” option card can be applied on PLC (Programmable Logic Controller), or Score Board applications.

Each Input circuit is isolated with “Photo-Coupler”, from external devices electrically.





F-function setting for BCD OUT			
F - No.	Set value	F - No.	Set value
F30	0	F60	0
F31	2	F61	2
F32	0	F62	0
F33	0	F63	0
F34	0	F64	0
F35	0	F65	0
F36	0	F66	0
F37	0	F67	0
F38	0		

6-9. Command Mode

Under "Command Mode", Indicator will recognize the receipt of Order based on 02h(Header) and 03h(END) signal, and transfers ACK(06)/ NAK(15).

6-9-1. Read Command (Standard Serial Port and Optional Port is same.)

P.C ->> SI 4410	Command	SI 4410 Response
STX ID NO. RCWT ETX	Current Weight	**Current Weight Transfer** -STX ID NO. RCWT ST/US,NT/GS **Current Weight(7/8byte) weight unit(2byte)** ETX
STX ID NO. RCWD ETX	Indicator Memory	**Indicator Memory data Transfer** -STX ID NO. RCWD **DATE(6byte) TIME(6byte) P/N(2byte) S/N(6byte) TARE(7/8byte) current weight(7/8byte) weight unit(2byte)** ETX
STX ID NO. RFTT ETX	All Set values	**All Set values Transfer** -STX ID NO. RFTT **FINAL(7/8byte), PRE1(7/8byte), PRE2(7/8byte), FREE FALL(5byte)** ETX
STX ID NO. RSUB ETX	SUB-Total Data	**SUB-Total Data Transfer** -STX ID NO. RSUB **P/N(2byte) Accumulated Count(6byte) Accumulated Weight(11byte) Weight Unit(2byte)** ETX
STX ID NO. RGRD ETX	GRAND Total Data	**GRAND Total Data Transfer** -STX ID NO. RGRD **P/N(2byte) Accumulated Count(6byte) Accumulated Weight(11byte) Weight Unit(2byte)**ETX
STX ID NO. RSNO ETX	S/N Data (Accumulated data)	**S/N Data Transfer(For Current P/N)** -STX ID NO. RSNO **Accumulated Count(6byte)** ETX
STX ID NO. RFIN ETX	Finished Weight	**Finished Weight Data Transfer** -STX ID NO. RFIN **Finished Weight(7/8byte)** ETX

STX ID NO. RTIM ETX	Current Time Data	**Current Time Data Transfer** -STX ID NO. RTIM **Current Time(6byte)** ETX
STX ID NO. RDAT ETX	Current Date Data	**Current Date Data Transfer** -STX ID NO. RDAT **Current Date(6byte)** ETX
STX ID NO. RTAR ETX	TARE Data	**TARE Data Transfer** -STX ID NO. RTAR **TARE Data(7/8byte)** ETX
STX ID NO. RPR1 ETX	PRE1 Set value	**PRE1 Set value Data Transfer** -STX IN NO. RPR1 **PRE 1 Set value(7/8byte)** ETX
STX ID NO. RPR2 ETX	PRE2 Set value	**PRE 2 Set value Data Transfer** -STX IN NO. RPR2 **PRE 2 Set value(7/8byte)** ETX
STX ID NO. RFIL ETX	FINAL Set value	**FINAL Set value Data Transfer** -STX IN NO. RFIL **FINAL Set value(7/8byte)** ETX
STX ID NO. RFRE ETX	FREE FALL Set value	**FREE FALL Set value Data Transfer** -STX IN NO. RFRE **FREE FALL Set value(5byte)** ETX
STX ID NO. RLOW ETX	LOW set value	**LOW Set value Data Transfer** -STX IN NO. RLOW **LOW Set value(7/8byte)** ETX
STX ID NO. RHIG ETX	HIGH Set value	**HIGH Set value Data Transfer** -STX IN NO. RHIG **HIGH Set value(7/8byte)** ETX
STX ID NO. RWRS ETX	Weight, External input, Relay data	**Current Weight, External Input, Relay Data Transfer** -STX IN NO. RWRS +/-(1byte),Current **Weight(7/8byte), External Input(4byte),** **Relay output(6byte)** ETX
STX ID NO. RPNO ETX	P/N data	**P/N Set value Data Transfer** -STX IN NO. RPNO **P/N 값(2byte)** ETX

6-9-2. Write Command

P.C ->> SI 4200	Command	SI 4410 Response
STX ID NO. WZER ETX	To make Current Weight as Zero	ACK or NAK
STX ID NO. WTAR ETX	TARE	ACK or NAK
STX ID NO. WTRS ETX	TARE Reset	ACK or NAK
STX ID NO. WPRT ETX	Print	ACK or NAK
STX ID NO. WSPR ETX	SUB-Total Print	ACK or NAK
STX ID NO. WGPR ETX	GRAND Total Print	ACK or NAK
STX ID NO. WSTC ETX	Delete SUB-Total Data	ACK or NAK
STX ID NO. WGTC ETX	Delete GRAND-Total Data	ACK or NAK
STX ID NO. WSTR ETX	RUN	ACK or NAK
STX ID NO. WSTP ETX	STOP	ACK or NAK
STX ID NO. WTIM **Time Data(6byte)** ETX	TIME Setting	ACK or NAK
STX ID NO. WDAT **Date Data(6byte)** ETX	DATE Setting	ACK or NAK
STX ID NO. WPR1 **PRE1 Data(7/8byte)**ETX	PRE 1 Setting	ACK or NAK
STX ID NO. WPR2 **PRE2 Data(7/8byte)**ETX	PRE 2 Setting	ACK or NAK
STX ID NO. WFIL **FINAL Data(7/8byte)**ETX	FINAL Setting	ACK or NAK
STX ID NO. WFRE **Free Fall Data(5byte)**ETX	FREE FALL Setting	ACK or NAK
STX ID NO. WLOW **Low Data(7/8byte)**ETX	LOW Setting	ACK or NAK
STX ID NO. WHIG **High Data(7/8byte)** ETX	HIGH Setting	ACK or NAK
STX ID NO. WPNO **P/N Data(2byte)** ETX	P/N Change	ACK or NAK
STX ID NO. WFTD **All Setting Data** ETX	PRE1, PRE2, FREE FALL, FINAL Setting	ACK or NAK

- **How to Calculate Check sum.**

Sum the value from “STX” to “ETX” and converts to ASCII(2byte) and transfer.

Convert the Sum value(HEX) to ASCII and transmit(28byte) .

ex) The sum HEX value from STX to ETX(02,30,31,52,43,57,54,03) is 1A6h.

Then, divide 1A6h by 100h(1A6h/100h). the rest of result is A6h.

Calculated remainder value is A6h, then convert A6h to ASCII, 41(A), 36(6), and transfer.

7. Error & Treatment

7-1. Load Cell Installation

Error	Cause	Treatment	Remark
Weight Value is unstable	1.Load cell broken 2. Load cell isolation resistance error 3. Weighing part touches other devices or some weight is on the weighing part 4. Summing Board Error	1. Measure input/output resistance of Load cell. 2.Measure Load cell isolation resistance 3. Check attach point with other devices.	1. Input Resistance of "EXC+" and "EXC-" is about 400Ω. ±30 2. Output Resistance of "SIG+" and "SIG-" is about 350Ω. ±3.5 3. Isolate Resistance is more than 100MΩ
Weight Value is increased regular rate, but not return to "Zero"	1. Load cell Error 2. Load cell connection Error	1. Check Load cell connection 2. Measure Load cell Resistance	
Weight Value is increased to under Zero	Load cell Output wire (SIG+, SIG-) is switched	Make wire correction	
"UN PASS" display	Load cell broken or Indicator connection Error	Load cell Check Load cell connection Check	
	Power was "ON" when some weight is on the load cell?	Remove weight on the Load cell	
"OL" or "UL" display	1. Load cell broken or Indicator connection Error 2. Loading over than Max Capa.	1. Load cell Check 2. Load cell connection Check 3. Remove over loaded weight	

7-2. Calibration Process

Error	Cause	Treatment
Err 01	When Maxcapacity/digit value is over 20,000	Re-input the Max Capacity, less than 20,000 (Max Capacity / Digit)
Err 04	Standard weight value is over than Max Capa	Re-input Standard weight value with Number keys, under Max Capacity
Err 05	Standard weight value is less than 10% of Max Capa	Re-input Standard weight value with Number keys, more than 10% of Max Capacity
Err 06	1. Amp. Gain is too big 2. Sig+ and Sig- wire connection error 3. Test weight is not loaded	Check standard weight's weight with set value. If there is difference between set value and real weight, please re-input the value (set value is too small)
Err 07	1. Amp. Gain is too small 2. Sig+ and Sig- wire connection error 3. Test weight is not loaded	Check standard weight's weight with set value. If there is difference between set value and real weight, please re-input the value (set value is too big)
Err 08	Under "F-function" model, set value is "N.A"	Check the correct value and re-input
Err A	When there is continuous vibration on the weighing part,, indicator can not process calibration any more.	- Find vibration cause and remove - Load cell check - Load cell cable and connecting condition check

7-3. Digital Weighing Indicator7-3. Digital Weighing Indicator

Error No.	Display	Cause	Treatment
No.1	"CELL-Er" or "--OL--"	1. Load cell Error 2. Load cell cable Error 3.Load cell connection Error 4. A/D Board Error 5.It displays under 5000 or Over520000.	1. Under "TEST" mode 1, check analogue value. If you can not get any analogue value or there is no change although adding load, please check load cell, load cell cable, connection conditions first. 2. Replace another load cell, and check the indicator condition. If you have same problem, please replace new indicator and check A/D board error.
No.2	"Un-Pass"	1. Power is ON, when some materials are on weighing part. ※ Under "Normal Mode", if there are more than 20% loading of Max capacity, "**Un-Pass**" display will be appeared and indicator will stay until removing the load. ※Setting Back-up mode it can memory empty value, and it becomes set value without displaying" Un-pass")	1. If you set "Normal Mode", please check weighing part empty or not before turn on the power. If there are some materials in/on weighing part, please remove those materials and turn on the power. 2. Please try to set F02-01(Back-up) mode so that the indicator can remember first empty value. ※ Under "UNPASS", please press F key, then you can exit the mode you are.
No.3	"FN-SET"	1. When "FN-Memory" is defected 2. When the "FN-Memory" is empty.	1. Please contact the distributor or Head Office.
No.4	"P-Err"	Under Parallel Printer is connected and installed. 1. Parallel printer interface is defected or disconnected.	1. Please check connection of the print cable. 2. Please check the trouble of print. ※ If you only install "Parallel Print" option card, you can check to do.

※ Under "CELL-Er", Relay will not be Output, and Analogue Output(4~20mA/0~10V), either.

7-4. Indicator Test mode

Through this “Test Mode”, you can check basic conditions of Indicator.

This Test consists with total 7 tests.

7-4-1. Enter “Test Mode”

Press 

key for 4sec, then display will show “F-Test”.

Under this display, press No.2 key and enter the “Test Mode”.

Under “Test Mode”, please choose each test and check the basic conditions of Indicator.

If you want to exit from each “Test Mode”, press 

key.

7-4-2. Test Mode

Test Mode	Contents
Test 1. Analogue Value Test	Under “TEST” display, press No.1 key and Enter “TEST1” mode. Under this mode, you can check the A/D value. If the A/D value is close to 520,000, or there is no change although pressing or loading some force on/in weighing part, please check load cell, load cell, cable, connecter, A/D board.
Test 2. Key test	Under “TEST” display, press No.2 key and Enter “TEST2” mode. Press each key, and check the pressed key is operated.
Test 3. Output Relay Test	Under “TEST” display, press No.3 key and Enter “TEST3” mode. This Test will be operated automatically from Relay1 to Relay6. ※ This test will operate automatically, so please remove all materials in/on weighing parts. If you can not remove materials, please remove relay terminals.
Test 4. External Input Test	Under “TEST” display, press No.4 key and Enter “TEST4” mode. If you press External input S/W, the External S/W No. will be displayed. If the S/W No. is not displayed, please check connecting condition.
Test 5. Communication Test (Com. Port 1)	Under “TEST” display, press No.5 key and Enter “TEST5” mode. After connecting No.2 and 3 pin of 9pin connector, you can test communication condition, like TXD or RXD/TXD. If there is an error in communication, “232-Err” will be displayed with 3times buzzer sound. The communication is working properly, “232Pass” will be displayed with one time buzzer sound.
Test 6. Communication Test (Com. Port 2)	Under “TEST” display, press No.6 key and Enter “TEST6” mode. After connecting No.2 and 3 pin of 9pin connector, you can test communication condition, like TXD or RXD/TXD. If there is an error in communication, “232-Err” will be displayed with 3times buzzer sound. The communication is working properly, “232Pass” will be displayed with one time buzzer sound.
Test 7. BCD IN Test	This test is for “BCD Input”. If you install “BCD IN” option card, you can test this option card operation through this Test mode.
Test 8. BCD OUT	This test if for “BCD out” Through this test mode, you can check operation of BCD output.

WARRANTEE CETIFICATION

This product is passed "Sewhacnm"s strict quality test.

If there is defect of manufacturing or abnormal detection within warrantee period, please contact our Agent or Distributor with this Warrantee certificate.

Then, we will repair or replace free of charge.

WARRANTEE CLAUSE

1. The Warrantee period, we can guarantee, is one(1) year from your purchasing date

2. Warrantee Exception Clause

- Warrantee period is expired.
- Any kinds of Mal-function or defection caused by Modification or Repair without Sewhacnm's permission.
- Any kinds of Mal-function, Defection, or External damage, caused by operator
- Any kinds of Mal-function, Defection, caused by using spare part from Non-Authorized Distributor or Agent.
- Any kinds of Mal-function, Defection, caused by not following Warnings or Cautions mentioned on this manual.
- Any kinds of Mal-function, Defection caused by "Force Majeur", like Fire, Flood.
- Without presentation of this **"Warrantee Certification".**

3. Other

- Any kinds of "Warrantee Certification" without authorized Stamp is out of validity

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Made in KOREA

Product	Digital Weighing Indicator
Model	SI 4410
Serial No.	
AUTHORIZED STAMP	Sewha CNM Co.,Ltd