Digital Weighing Indicator

Model : SI 4500

Operation Manual

SEWHA CNM CO., LTD.
주식회사 세화씨엔엠

CONTENTS

1. BEFORE INSTALLATION

1-1. Caution / Warning Marks

 *Warning*	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.

Head Office : Sewhacnm Co.,Ltd.

Website : www.sewhacnm.co.kr

Email : sales@sewhacnm.co.kr

2. INTRODUCTION

2-1. Introduction

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

This "SI 4500" model is advanced model of "SI 3500", with powerful communication performance.

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

This "SI 4500" Weighing Controller is optimize for "Multiple Accumulating Mixture Batching Process" with 50kinds different mixing Formulas.

And it has two different operating modes(Automatic / Manual) batching process.

Enjoy your process with "SI 4500" Weighing Controller.

2-2. 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 connected with PLC or Sequence board)

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)

10). Variable options(Order in advance, Refer Chapter 6. Interface) – "RS-232C" Standard installed.

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] ±16PPM/℃ [Span] ±3.5PPM/℃
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**
Display	Main Display	7Segments, 7digits VFD green Color Size :12.7(H) ×7.0(W)mm
	Sub-Display	7Segments, 6digits FND, Red Color Size : 9.2(H) ×4.8(W)mm × 4pcs
	Min. Division	×1, ×2, ×5, ×10, ×20, ×50
	Max display value	+999,950
	Under Zero value	"-" (Minus display)
Status lamp	Steady, Zero, Tare, STB, Run, Print, Comm.	" ▼" Condition display Lamp
	kg, g, t / FINAL, PRE1, Operating	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 / Gross Weight(kg)	About 2.3kg / 3.0kg

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

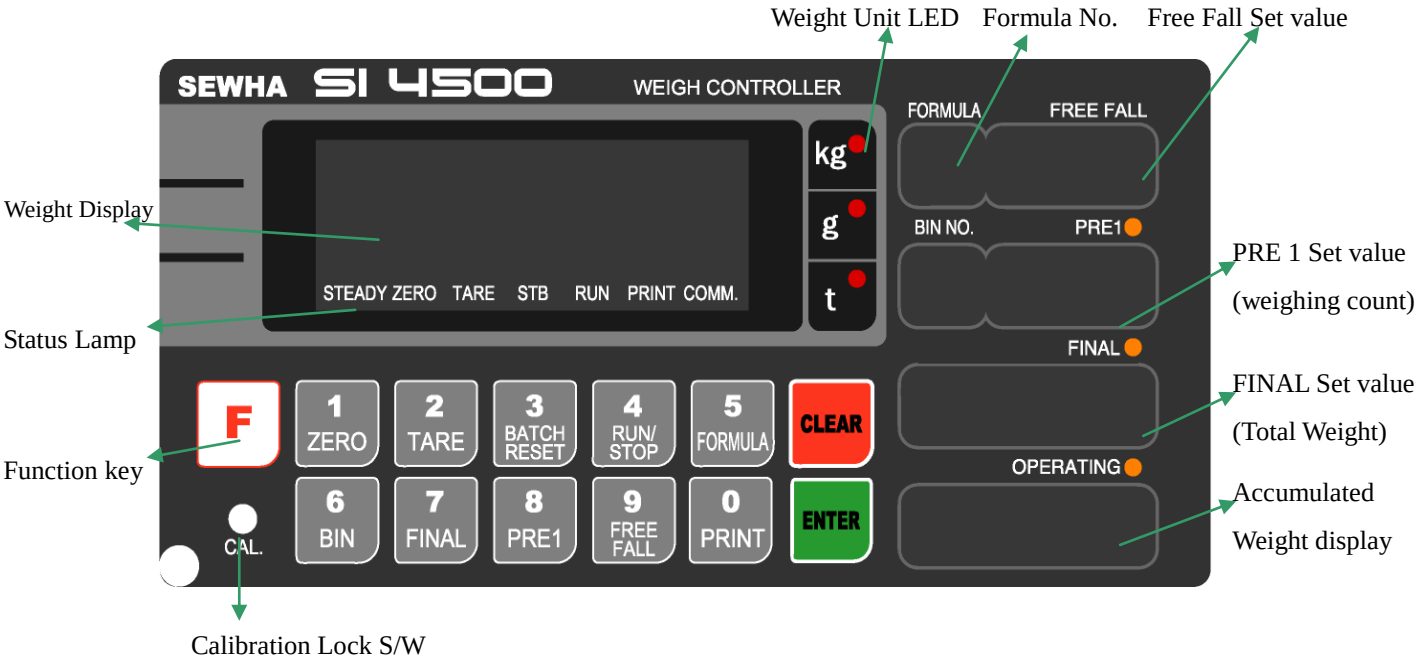
3-4. Option Card

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.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)



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.)
STB	Batch "Stand by" display.
Run	Weighing Batch is started, "▼" Lamp is turn on.
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 RESET :  + 
	Initialize Batch Process. If the Batch process is not initialized, the process will not activated.
	**1. To START or STOP weighing process.** First input, SI 4500 Controller Starts weighing process, and Second input, SI 4500 Controller stops weighing process.
	Can set Max 50kinds different "Mixing Formulas" with this key. And call saved mixing formula, too. **Formula save : Choose certain P/N and each Bin's set vale.** **Formula call : P/N + Number key + Enter**
	Set each material's set value with this key. ※ Each Bin has its own "FINAL", "PRE 1", "Free Fall" set values. **FINAL value set : Final + Number key + Enter** **PRE 1 value set : Pre1 + Number key + Enter**
	Set each Bin's Final set value with this key. **FINAL value set : FINAL + Number key + Enter** **FINAL value Check : Press FINAL → Display during 5sec**

	Set each Bin's PRE 1 set value with this key. **PRE1 value set : PRE1 + Number key + Enter** **PRE1 value Check : Press PRE1 → Display during 5sec**
	Set each Bin's Free Fall value and control FINISH relay in advance. **Free Fall value setting : Free Fall + Number key + Enter** **Free Fall value check : Press Free fall → Display during 5sec**
	**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.
	**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.
	**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
	**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")
	Enter/Exit to "Calibration" mode.

※ Function Keys (Combined Key functions)

Function Key		Contents
F	5 FORMULA	Print all P/Ns' accumulated weighing count and weight. (Grand-Total Print)
F	6 BIN	Print current P/N's accumulated weighing count and weight. (Sub-Total Print)
F	7 FINAL	Set Total No. of BIN, which will be used for current Batch process. Max 16kinds Bins will be settable or single process. **Not using BIN** : Must set "FINAL" value as "0". **Using BIN** : Must set "FINAL", "PRE1", "Free Fall".
F	8 PRE1	Set "Over N.G"(Error relay) range. (If you set larger value than FINAL value, the setting is not saved)
F	9 FREE FALL	Set "Under N.G"(Error relay) range. (If you set larger value than FINAL value, the setting is not saved)
CLEAR	5 FORMULA	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 BIN	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).
CLEAR	2 TARE	Remove TARE.

※ 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

Warning

① POWER AC IN

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

※ 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.

※External input mode

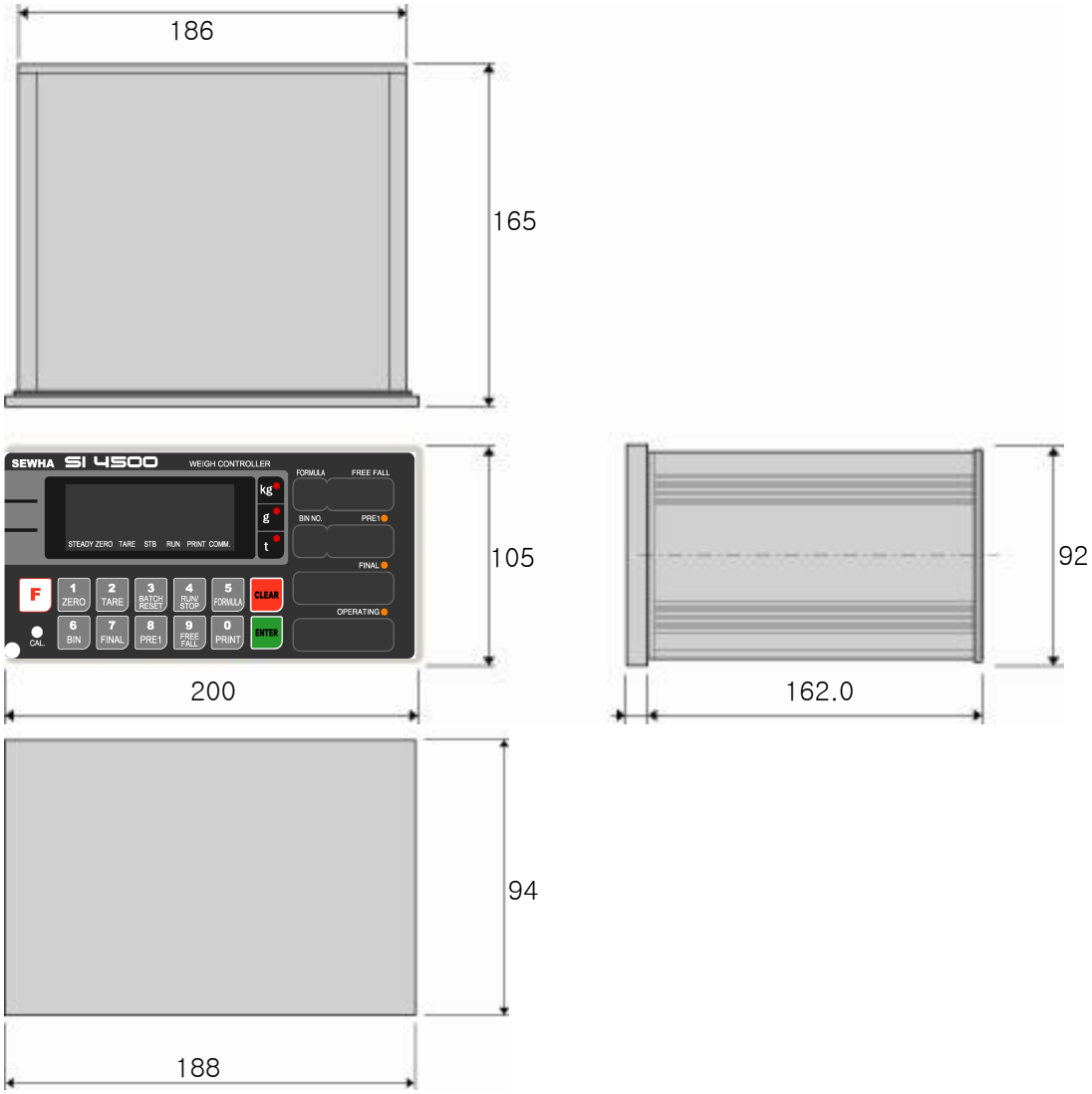
External Input	Input "1"	Input "2"	Input "3"	Input "4"
	BIN "Run"	BIN "Stop"	BATCH "Reset"	Zero/Pause

※ If "F52-01" set-up, the batch initialization will be done automatically without input "3" operating.

4. INSTALLATION

4-1. External Dimension & Cutting Size

(External Dimension) (unit : mm)

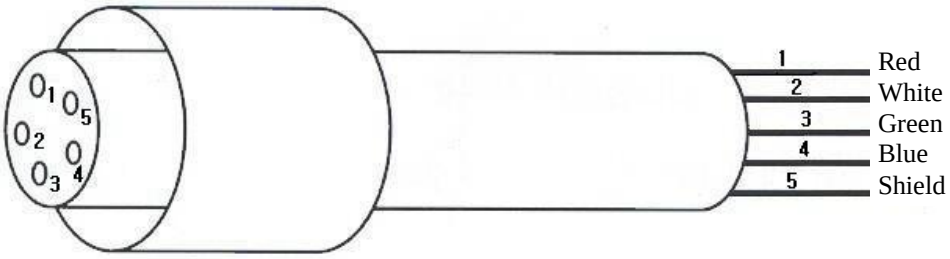


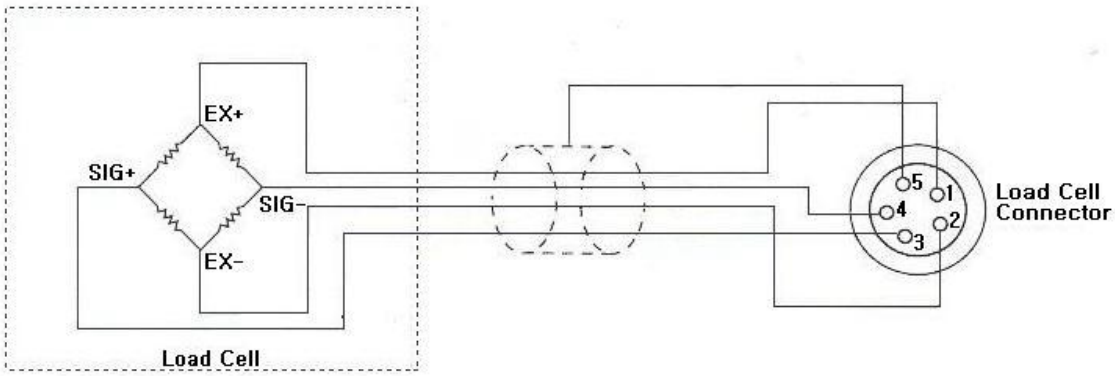
4-2. Installation Components

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

4-3. Load Cell Installation

4-2-1. Load Cell Connector Specification





4-2-2. 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. Load Cell Wire Connection

1). Please connect Indicator's connector and Load cell cable basis on each color.

2). It is possible to connect Max 8pcs same capacity load cells with parallel. (350Ω)

3). LOAD CELL Connector Standard : N16 - 05

4). The load cell cable color can be different from each manufacturer, please refer following data sheet.

5). Load Cell Wire Color Chart (Sorted by Manufacturer)

Manufacturers	**EXC+**	**EXC-**	**SIG+**	**SIG-**	**SHIELD**
Sewha CNM	Red	White	Green	Blue	Black
Bongshin, CAS ,TMI ,AND	Red	White	Green	Blue	Yellow(Shield)
Daesung	Red	Black	White	Green	Shield
Power MNC	Red	White	Green	Black	Shield
Disocell	Red	Blue	Green	White	Black
Dacell	Red	White	Green	Blue	Shield
BLH	Green	Black	White	Red	Yellow
INTERFACE	Red	Black	Green	White	Shield
KYOWA	Red	Black	Green	White	Shield
P.T	Red	Black	Green	White	Shield
SHOWA	Red	Blue	White	Black	Shield
SHINKOH	Red	Black	Green	White	Shield
TML	Red	Black	White	Green	Shield
TEAC	Red	Blue	White	Black	Yellow
HUNTLEIGH	Green	Black	Red	White	Shield

※ Each Wire's color specification can be changed without prior notice.

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

This "SI 5010" 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

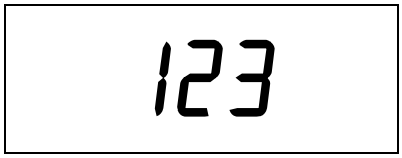
5-2. Test Weight Calibration Mode (Using Test weight)

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

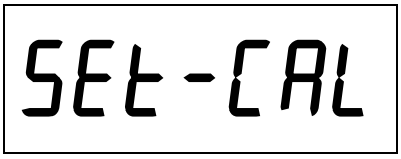
Remove **"CAL-BOLT"** on the indicator's front panel and press **"CAL - LOCK S/W"** inside.

※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.



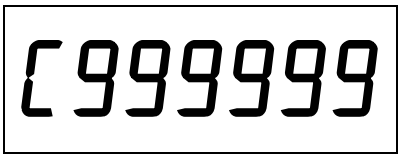
※ To save the each step, press 

key, and for the cancel or move back, press 

key.

3. If you press 

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

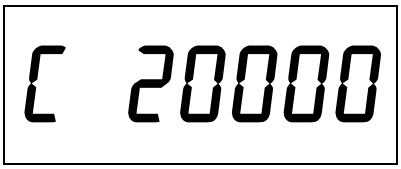


4. Input the max capacity of your weighing scale,

And press 

key.

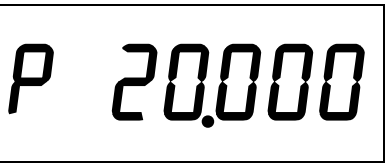
Ex) Load cell CAPA : 20kg, division : 0.001 → Input 20000



5. Define the optimal position of decimal point.

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 

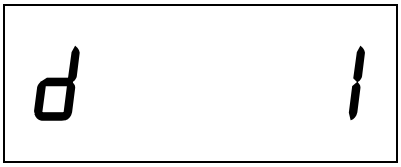
key to save and move to next step.

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

Whenever you press 

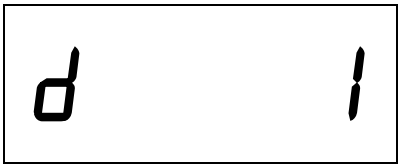
key, the Digit/Division value will be changed in order of "1 → 2 → 5 → 10 → 20 → 50" .

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**.

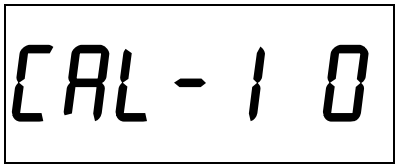
If the division is so small compare with max capacity, Error message **" Err 01 "** will be displayed and move back to **"CAPA"** step again.

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 

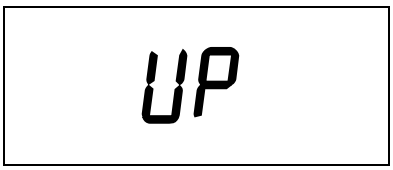
key.

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.

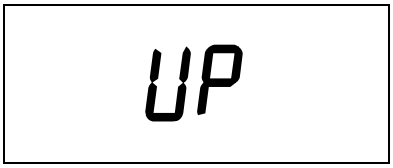
13. When "UP" is displayed, load your test weight on the scale (weigh bridge) Ex) Load Cell CAPA : 20kg, division 0.001



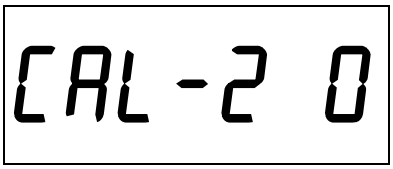
14. And press 

key.

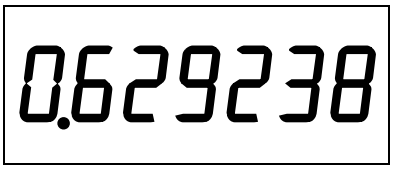
→ Do not remove the test weight from weigh bridge.



15. Indicator will calculate span value during 5sec.



16. After finish calculation, span value will be displayed.
Please remove the test weight from weigh bridge.



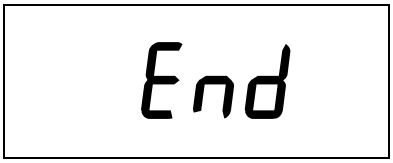
※ **Caution :** The **"Test Weight's value"** must be at least **10%** Max capacity of weighing scale.

"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.



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

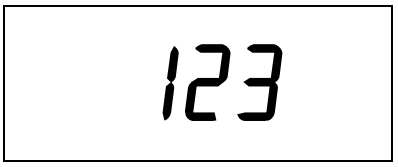
Through this **"Simulation Calibration Mode"** you can do simple calibration process without Test weight**.**

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

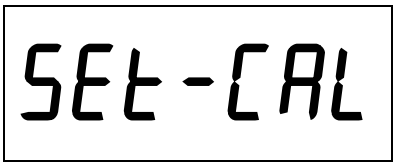
Simulation calibration's degree of accuracy is lower than test weight calibration.

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.

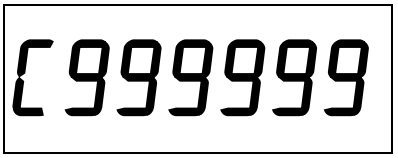
※ To save the each step, press 

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.)



5. After input max capacity of your load cell (at the label),
press 

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

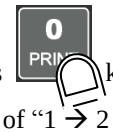
key, the location of decimal point will be changed.

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.

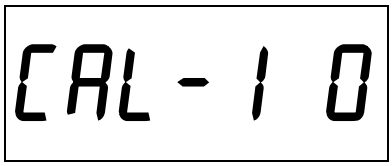
※ **Caution : (Division value /Max capacity value)** cannot over **1/20,000**.
If the division is so small compare with max capacity, Error message **" Err 01 "** will be displayed and move back to **"CAPA"** mode again.

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

When you press 

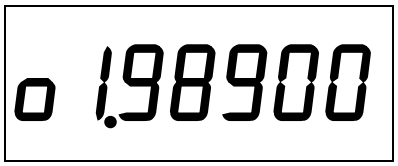
key, the indicator starts the dead process to find "Zero" span.

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



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

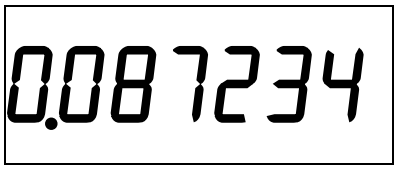
13. Input Load cell Output Rate(mV/V) (refer the load cell label)
Ex) Load cell Related output : 1.989 mV/V



※ 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.

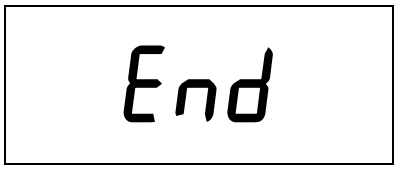
14. After inputting R.O. value, press 

key.
Calculated "Span value" will be displayed.



15. Press 

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 4500 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.

5-3-4. 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 Detailed information

■ 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 Batch Finished)
Weight-Back up selection			
F02		0	Normal Mode
	●	1	Weight Back up Mode
Motion Band Range setting			
F03	06	01 ∫ 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. 1 : 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)

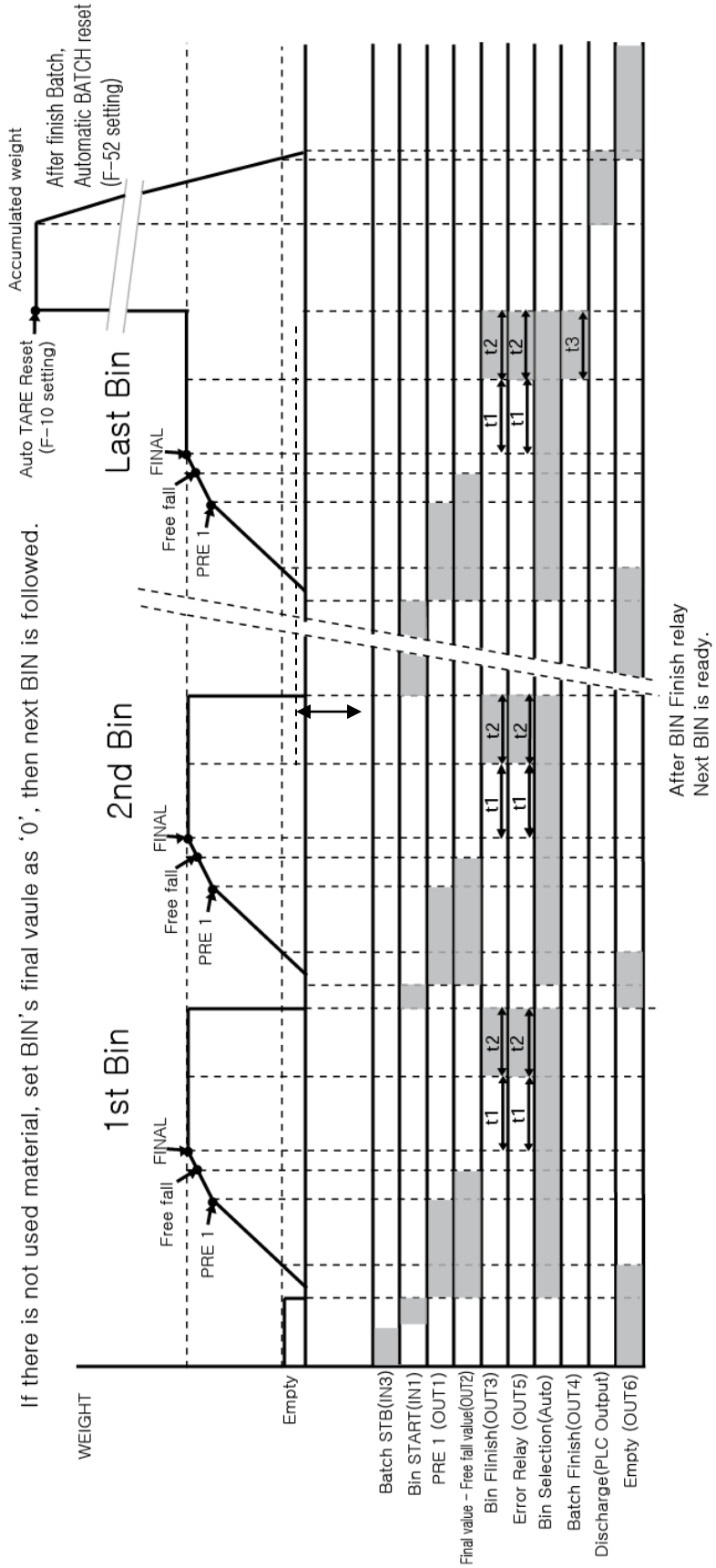
Digital Filter setting				
F06	24	AB	A : Frequency Filter setting value (0~3) (0 : about 200Hz/sec, 3 : about 500Hz/sec) B : Buffer Filter setting value (1~9)	If "B" set value is fixed, "A" set value is large, the indicator will response more sensitive.
Zero /Tare key Operation mode selection				
F07	●	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	
Auto TARE Reset selection				
F10	●	0	Not use	
		1	Batch Finish relay output → Auto TARE RESET	
 **key Operation select**				
F11		0	 will not be activated (Can operate with Automatic mode, only)	
	●	1	 will be activated (Can operate with Manual mode)	

"STEADY" condition check time setting			
F12	03	01 ∫ 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			
F13		0	About 10ms
	●	1	About 30ms
		2	About 50ms
		∫	∫
		8	About 170ms
		9	About 190ms
(FINAL, PRE1, Free Fall, No of BIN) Set value apply selection			
F14	●	0	Apply only certain P/N
		1	Apply same set value to all P/N
BATCH Process Back-Up Mode			
F15	●	0	Normal Mode (Batch Process will not be saved)
		1	Back-Up Mode (Batch Process will be saved)
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)

■ Relay Output Mode Setting

Bin Finish Relay/Error Relay output delay time(t1) setting			
F22	10	00 ∫ 99	When the BIN weight is reached to BIN Final setting, you can set the delay time until "BIN FINISH" relay output. 00 setting : When the weight is "STEA DY", relay out. 20 setting : After 2.0sec, relay out 99 setting : After 9.9sec, relay out
Bin Finish / Error Relay output duration time(t2) setting			
F23	10	01 ∫ 99	01 setting : During 0.1sec, Batch Finish relay output 20 setting : During 2.0sec, Batch Finish relay output
Empty Relay Output Selection			
F25		0	Absolute Weight Value - "+/-" weight value : Empty Relay output "ON".
	●	1	Positive Weight Value - Only for "+" weight value, Empty Relay will be output.
Batch Finish Relay Output Duration Time (t3) setting			
F27	10	01 ∫ 99	After the last Bin's Finish relay's delay time, Batch Finish relay will be output during set time period 01 setting : During 0.1sec, Batch Finish relay output 20 setting : During 2.0sec, Batch Finish relay output

■ Relay Output Time Chart



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

Parity Bit Selection Mode					
F30	●	0	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Non)
		1	DATA Bit (7 Bit)	STOP Bit (2 Bit)	Parity Bit (Non)
		2	DATA Bit (7 Bit)	STOP Bit (1 Bit)	Parity Bit (Even)
		3	DATA Bit (7 Bit)	STOP Bit (1 Bit)	Parity Bit (Odd)
		4	DATA Bit (8 Bit)	STOP Bit (2 Bit)	Parity Bit (Non)
		5	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Even)
		6	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Odd)
Serial Communication Speed selection					
F31		0	2,400bps		
		1	4,800bps		
	●	2	9,600bps		
		3	14,400bps		
		4	19,200bps		
		5	28,800bps		
		6	38,400bps		
		7	57,600bps		
		8	76,800bps		
		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
			AND Format
Print Mode selection (Under F32-00, F35-01 setting, only)			
F38	●	0	Manual Print : Whenever “Print” key input.
		1	Auto Print : When Batch Finish relay output, automatically print.(F01-01setting)
STREAM MODE Output Data Selection (F32-00, F3-00, F36-00 setting)			
F39	●	0	Current weight data will be output (same as main display)
		1	Accumulated Weight data will be output
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	**Detailed Print format** Each BIN’s finished weight will be printed separately.
		1	**Simple Print format** Only Batch Finished weight will be printed.
Print Format selection (If you install on Optional Serial Port)			
F43	●	0	**Detailed Print format** Each BIN’s finished weight will be printed separately.
		1	**Simple Print format** Only Batch Finished weight will be printed.
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
Automatic BATCH reset selection			
F52	●	0	Not use
		1	Automatic BATCH reset
Auto BATCH RESET, When Power is "ON"			
F53	●	0	Not Use
		1	Use
Communication Interval Setting			
F54	●	0	Fast Speed (The interval is short)
		1	Low Speed (The interval is long)
BIN Output Selection			
F55	●	0	BCD type BIN Output (Max 16 BIN No. Output)
		1	1:1 matching type (Max 8 BIN No. Output)
Analogue Output Selection (Only when Analogue output option card is installed)			
F56	●	0	At Max Capacity, 20mA/10V will be output
		1	At "PRE1" set point, 20mA/10V will be output
		2	At "FINAL" set point, 20mA/10V will be output

Analogue Output Setting (4~20mA / Option)			
F58	●	0	Positive Output (Max Capacity : 20mA output)
		1	Negative Output (Max Capacity : 4mA output)
PassWord Using setting (F95 Change Password)			
F59	●	0	Not used
		1	Using

■ Other Setting

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

Press ENTER 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 "8 PRE2", "9 FREE FALL" key and press "CLEAR". After checking the value and press "CLEAR" 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 F32-00, F35-01 setting, only)						
F68	●	0	Manual Print : Whenever "Print" key input.			
		1	Auto Print : When Batch Finish relay output, automatically print.			

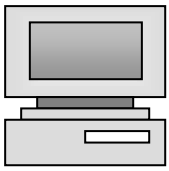
6. INTERFACE

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)

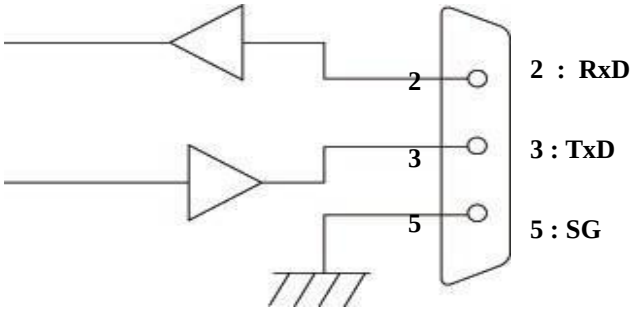
2 : RxD TxD :

3 : TxD RxD :

5 : SG SG :

SI 4500

6-1-2. RS-232C Circuit



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

		,			,	+/-	Including Decimal point		k	g	CR	LF

Header 1. Header 2. Data Byte (7 or 8 byte)

(F40 setting) Unit

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

ST : Display weight "Steady" US : Display "Un-Steady"

②. Header 2. : NT : Net-Weight

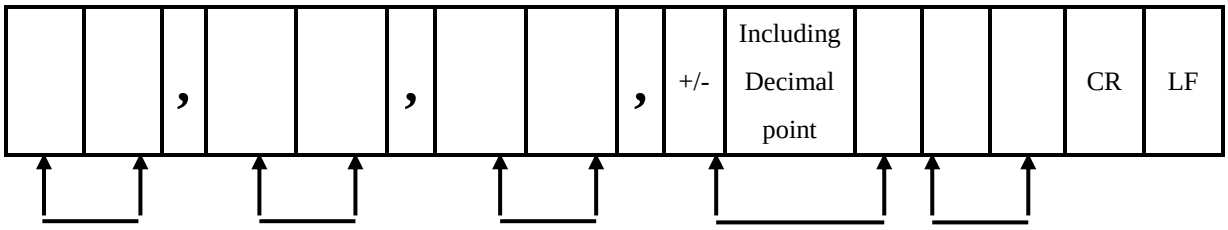
GS : Net-Weight, under TARE

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)



ID Number Header 1 Header 2 Data Byte (7 or 8 byte) (F38etting) Unit

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

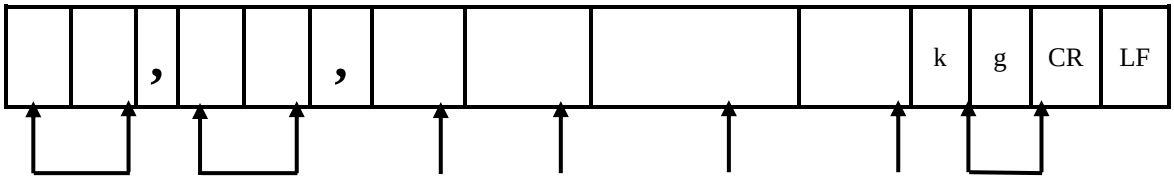
2D(H) : "-" Minus

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



Header 1 Header 2 ID No. Lamp Display Data(8) Space Weight Unit

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

ST : Display "Steady"

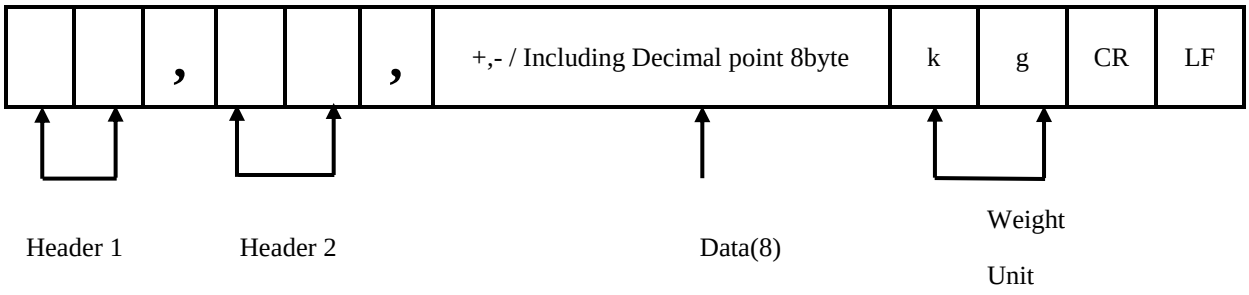
US : Display "Un-Steady"

②. Header 2. : NT : Net-Weight

GS : Net-Weight, under TARE.

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

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.

6-3-2. Data Format

As same as "RS-232C" Interface

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

3 : RxD TxD :

8

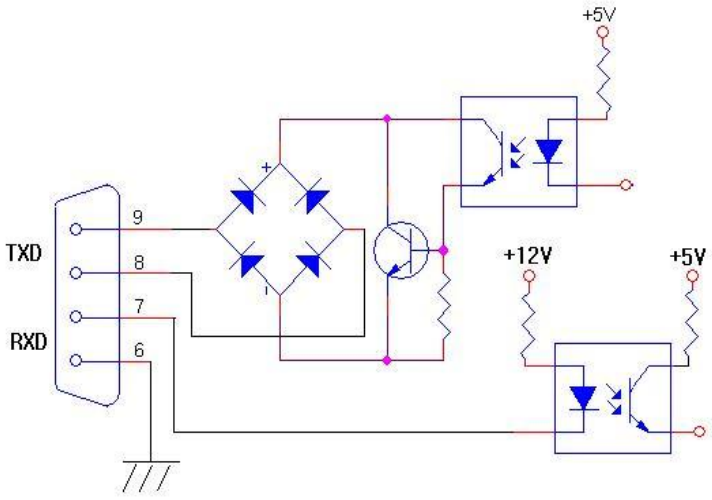
4 : RxD TxD :

Remote Display

(External Display)

SI 4500

6-3-4. 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)

Detailed Format

```
DATE : 2006-10-15
TIME: 10:20:30
ID_N : 01   FORMULA : 01

BIN_NUMBER      WEIGHT
01 BIN          1.000kg
03 BIN          1.004kg
06 BIN          1.139kg
07 BIN          0.500kg

SERIAL :        3
TOTAL WEIGHT :  3.643kg
```

Simple Format

```
DATE : 2006-10-15
TIME : 10:20:30
ID_N : 01   FORMULA : 01

SERIAL :            3
TOTAL WEIGHT :  3.643kg
```

Sub-Total

```
          SUB-TOTAL
DATE : 2006-10-15
TIME : 10:20:30
ID_N : 01   FORMULA : 01

BIN_NUMBER      WIEGHT
01 BIN          4.000kg
03 BIN          4.016kg
06 BIN          4.556kg
07 BIN          2.000kg

TOTAL COUNT :       4
TOTAL WEIGHT :  3.572kg
```

Grand-Total

```
          GRD-TOTAL
DATE :     2006-10-15
TIME :       10:40:30
ID_N :           01

FORMULA SERIAL WEIGHT
  01       4      13.572kg
  02       5      32.574kg
  06       3      10.483kg

TOTAL COUNT :       12
TOTAL WEIGHT : 56.629kg
```

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

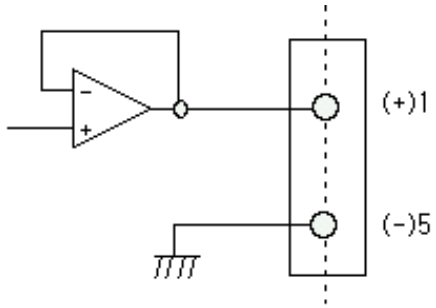
This Option card converts weight value to Analog Voltage output(0~10V) and transfers to external devices(Recorder, P.L.C), controlled by voltage output.

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.

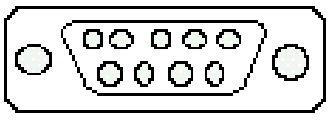
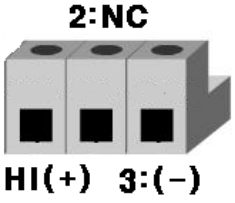
②. If you need additional adjustment, please adjust with “VR1(Zero)”, “VR2(Span) on the Analog Output PCB.

※ 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)

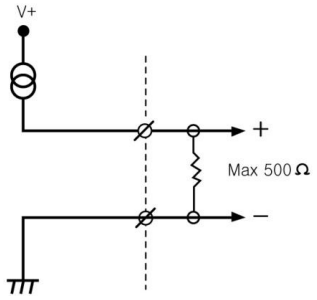
②. Accuracy : More than 1/1,000

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".

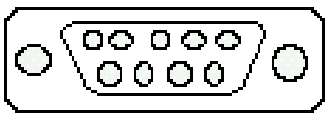
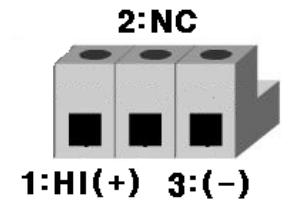
②. If you need additional adjustment, please adjust with "VR1(Zero)", "VR2(Span) on the Analog Output PCB.

※ 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

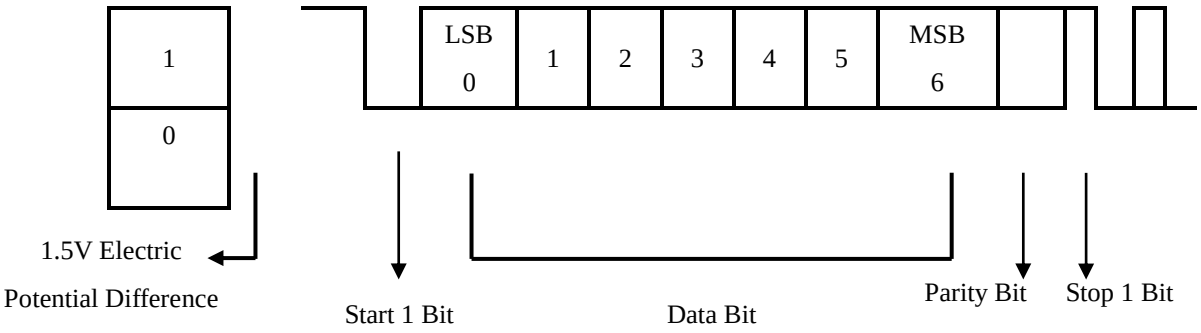
②. Format : Baud Rate : Refer "F-function 31".

Data Bit : 7 or 8(No Parity)

Stop : 1

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

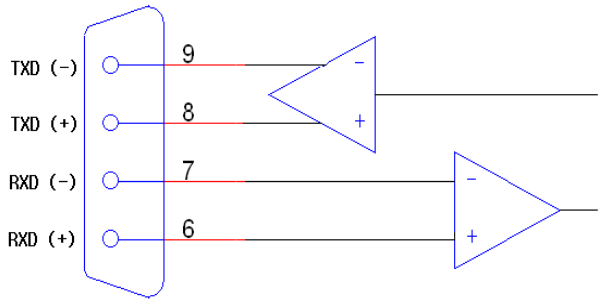
Code : ASCII (STX 02H, ETX 03H, CR 0DH, LF 0AH)



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**
	

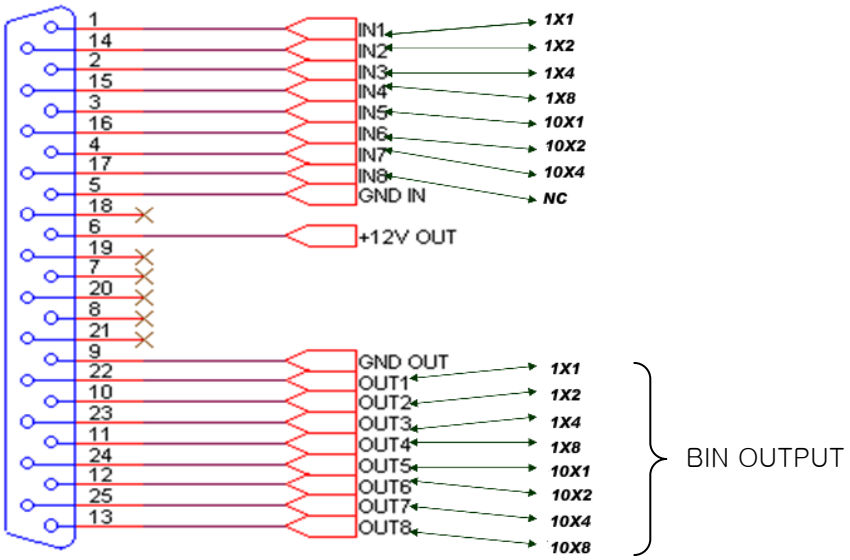
Terminal Block	1	2	3	4
RS-232	TX	RX	GND	GND
RS-485	RTX+	RTX-	NC	NC
RS-422	RXD+	RXD-	TXD+	TXD-

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

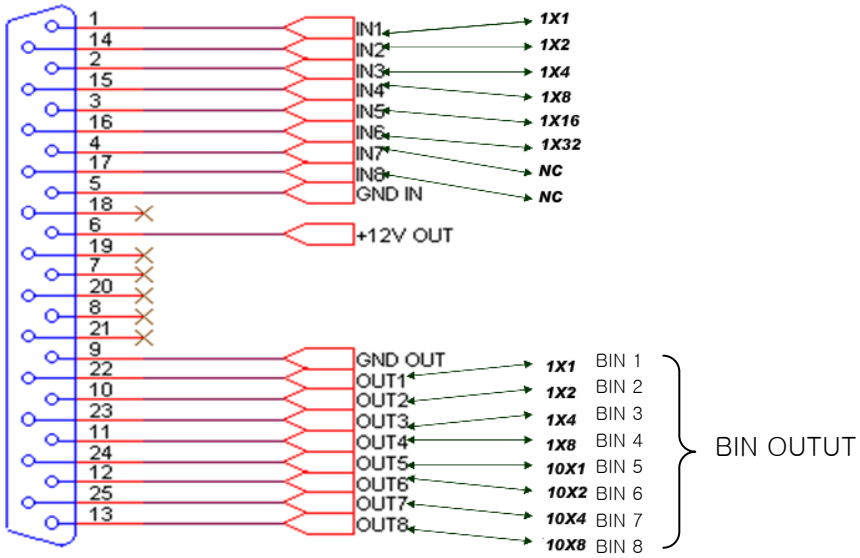
This “BCD interface” option card can be applied on PLC (Programmable Logic Controller), or Score Board applications.

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

F55-00 setting



F55-01 seting



6-8. 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).

6-8-1. Read Command (Standard Serial Port and Optional Port is same.)

※ Caution : Please use Capital Letter to input Command.

※ Each "READ" Command's interval must be guaranteed at least 100ms. If you command another one within 100ms, the indicator will not response. (Under "Check-Sum", the interval will be 150ms).

P.C ->> SI 4500	Command	SI 4500 Response
STX ID NO. RCWT ETX	Current Weight	**Current Weight(7/8byte, including Decimal point)** -STX ID NO. RCWT ST/US,NT/GS,± Current weight**(7/8byte)** weight unit(2byte)ETX
STX ID NO. RTIM ETX	Current Time	**Current Time data(6byte)** -STX ID NO. RTIM Current time data **(6byte)** ETX
STX ID NO. RDAT ETX	Current DATE	**Current Date data(6byte)** -STX ID NO. RDAT Current date**(6byte)** ETX
STX ID NO. RBIN ETX	Current Weighing BIN No.	Current weighing BIN NO.(2byte) -STX ID NO. RBIN Current weighing BIN No.**(2byte)** ETX
STX ID NO. RFML ETX	Current Weighing Formula No.	Current weighing FORMULA No.(2byte) -STX ID NO. RFML Formula No.**(2byte)** ETX
STX ID NO. RFIN ETX	Current Weighing BIN's FINAL	**Current Weighing BIN's FINAL value (7/8byte, including Decimal point)** -STX ID NO. RFIN BIN's FINAL value**(7/8byte)** ETX
STX ID NO. RDRI ETX	Current Weighing BIN's PRE1	**Current Weighing BIN's PRE1 value (7/8byte, including Decimal point)** -STX ID NO. RDRI PRE 1 value**(7/8byte)** ETX
STX ID NO. RFRE ETX	Current Weighing BIN's Free fall	**Current weighing BIN's Free Fall value** -STX IN NO. RFRE **FREE FALL value(5byte)** ETX
STX ID NO. RTTL ETX	Accumulated Weight, So far	**Accumulated weight, so far(7/8byte, including Decimal point)** -STX IN NO. RTTL Accumulated weight**(7/8byte)** ETX
STX ID NO. RFTD ETX	Each BIN's FINAL value of Current formula NO.	**Each Bin's FINAL value of Current Formula** -STX IN NO. RFTD**(112/128byte)** ETX
STX ID NO. RWRS ETX	Current Condition of Indicator (weight/relay)	**Current Condition of Indiactor(Weight/Relay) (7/8byte, including Decimal point)** -STX IN NO. RWRS **+/-(1byte) Current Weight(7/8byte), Relay output(6byte)**ETX

6-8-2. Write Command

※ Each "WRITE" Command's interval must be guaranteed at least 150ms. If you command another one within 150ms, the indicator will not response. (Under "Check-Sum", the interval will be 200ms).

P.C ->> SI 4500	**Command**	**SI 4500 Response**
STX ID NO. WZER ETX	Make Zero	ACK or NAK
STX ID NO. WTAR ETX	TARE set	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. WSTC ETX	Sub-Total delete	ACK or NAK
STX ID NO. WBRS ETX	BATCH Stand by	ACK or NAK
STX ID NO. WRUN ETX	Batch Start	ACK or NAK
STX ID NO. WSTB ETX	Batch Stop	ACK or NAK
STX ID NO. WTIM **Time Data(6byte)** ETX	Time Change	ACK or NAK
STX ID NO. WDAT **Date Data**(6byte) ETX	Date Change	ACK or NAK
STX ID NO. WDRI **PRE 1 data**(including decimal point 5 byte) ETX	PRE 1 value setting	ACK or NAK
STX ID NO. WFRE **Free Fall data**(5byte) ETX	Free Fall value setting	ACK or NAK
STX ID NO. WFIN **FINAL value** (7/8byte) ETX	FINAL value setting	ACK or NAK
STX ID NO. WSNO **Accumulated Weighing Count**(6byte) ETX	Accumulated Batch Count setting	ACK or NAK
STX ID NO. WFML **Formula No.**(2byte) ETX	Formula No. setting	ACK or NAK
STX ID NO. WBIN **BIN No.**(2byte) ETX	BIN No. setting	ACK or NAK
STX ID NO. WFTD Formula No., 1th BIN(7/8byte), BIN(Final data(7/8byte), PRE 1 data (5byte), Free Fall data (5byte))~No.16BIN Final data(7/8byte), PRE 1 data (5byte), Free Fall data (5byte)) ETX – Total 282/298byte	Set every Bin data, Pre 1data. Free fall data by each formula	ACK or NAK
STX ID NO. WRDY ETX	Commend for reset Batch	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 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 T-RESET 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

.

Manufacturer : SEWHACNM Co.,Ltd.

#504, 302Dong, 397, Seokcheon-ro, Ojeong-gu, Bucheon-si, Gyeonggi-do, Korea

Tel : +82 70) 4754 6140

Fax :+82 32) 624 0065

sales@sewhacnm.co.kr

http://www.sewhacnm.co.kr

Made in KOREA

Product	Digital Weighing Indicator
Model	SI 4500
Serial No.	
AUTHORIZED STAMP	Sewha CNM Co.,Ltd