CE

Approved for Digital Weigh Indicator

Digital Weighing Controller

SI 4010

Instruction Manual

SEWHACNM
WEIGHING SOLUTION

Version 3.20 (May 2011)

CONTENTS

1. Before Installation ---------- **3 page**

2. Introduction ---------- **4 page**

3. Specification ---------- **5 page**

4. Installation ---------- **11 page**

4-1. External Dimension & Cutting Size ---------- 11 page

4-2. Installation Components ---------- 12 page

4-3. Load Cell Installation ---------- 12 page

5. Set-up ---------- **13page**

5-1. Calibration ---------- 13 page

5-2. TEST Weight Calibration Mode ---------- 13 page

5-3. Simulation Calibration Mode(Without Test Weight) ---------- 16 page

5-4. Set-up ---------- 19 page

5-5. F-Function ---------- 20 page

6. Interface ---------- **27 page**

6-1. Serial Interface (RS-232C) ---------- 27 page

6-2. Current Loop Interface ---------- 31 page

6-3. Analog Output Interface (0~10V) ---------- 32 page

6-4. Analog Output Interface (4~20mA) ---------- 33 page

6-5. Serial Interface (RS-232C / 422 / 485) ---------- 34 page

6-6. BCD Input (BCD INPUT : P/N Change) ---------- 35 page

6-7. BCD Output ---------- 36 page

6-8. Print Interface ---------- 37 page

6-9. Command Mode ---------- 38 page

7. Error & Treatment ---------- **40 page**

7-1. Load Cell Installation ---------- 40 page

7-2. Calibration Process ---------- 40 page

7-3. Indicator Error & Treatment ---------- 41 page

7-4. Indicator Test Mode ---------- 42 page

Warrantee Certification ---------- **43 page**

1. BEFORE INSTALLATION

1-1. Caution / Warning Marks

	This mark warns the possibility to arrive death or serious injury in case of wrongly used.
	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 : http://www.sewhacnm.co.kr

Email : sales@sewhacnm.co.kr, info@sewhacnm.co.kr

2. INTRODUCTION

2-1. Introduction

Thank you for your choice, this “SI 4010” Industrial Digital Weighing Indictor..

This “SI 4010” model is simple weight display purpose with Large display(1inch),

and powerful communication performance.

With 2ports serial port communication and High Speed A/D conversion performance will lead you to precise weighing process.

Please review this instruction Manual and learn more about information about “SI 4000”.

Enjoy your process efficiency with “SI 4010” Weighing Indicator..

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) External input terminal inside.(4pcs:Can be set by F11 mode)
3) 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”.
4) Data back-up function, when the sudden power off.
5) Polycarbonate film panel, strong against dust and water.
6) 2port Serial Interface - RS-232C (Com. Port1) is standard installed.
7) HIGH / LOW Set points and Free Fall function for HIGH Set point.
8) Weight Unit selection Function added. (“g”, “kg”, “t” selectable – F40)
9) Variable options(Order in advance, Refer Chapter 5. Interface)

3. SPECIFICATION

3-1. Analog Input & A/D Conversion

Input Sensitivity	0.2㎶ / Digit
Load Cell Excitation	DC 10V (- 5V ~ + 5V)
Max. Input Signal	Max.3.2mV/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
Display	Main Display	7Segments, RED FND Display Size :24.5mm(H) Large Display (1inch)
	Min. Division	×1, ×2, ×5, ×10, ×20, ×50
	Max. display value	+999,950
	Under Zero value	"-" (Minus display)
Status lamp	Steady, Zero, Tare	Green LED Display(2Ø)
	kg, g, ton	
K e y	Number Key : 10 ea , Function : 3 ea , CAL. Lock key : 1 ea	

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.

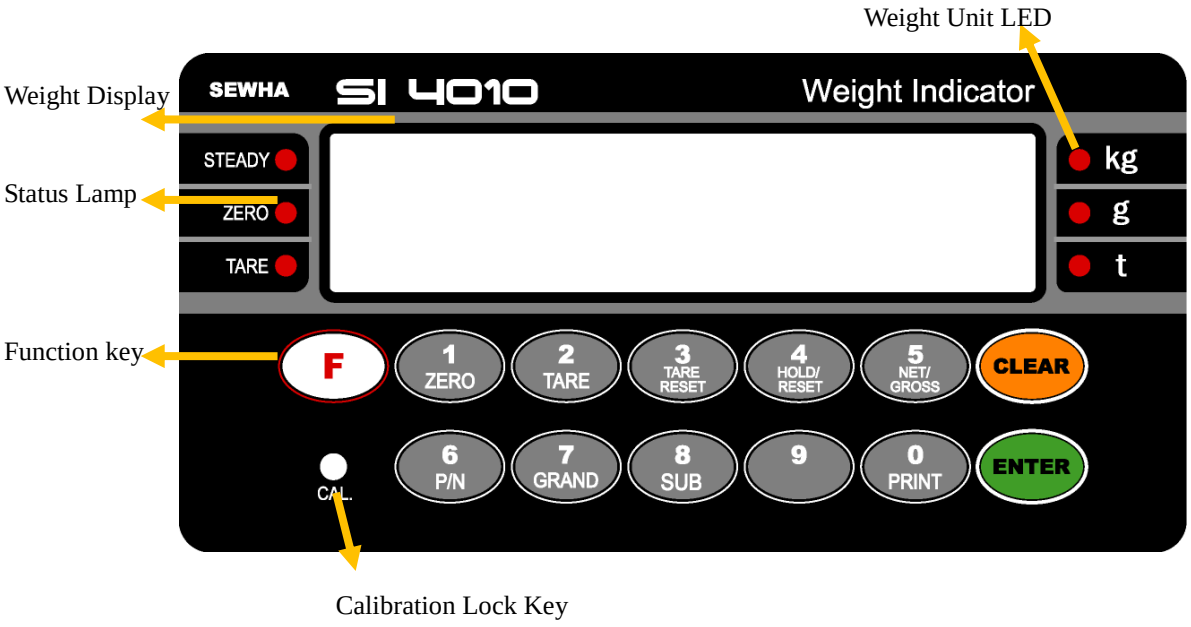
3-4. Option Card

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 : Part No. 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)



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

Steady	When the weight is Steady, "LED" Lamp is "ON"
Zero	When the current weight is Zero, "LED" Lamp is "ON"
Tare	Tare function is set, "LED" Lamp is "ON" (Tare Reset → "LED" Lamp is "OFF".)

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 activate within operation range.
	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. ※ Whenever pressing "Tare" key, you can set the Tare continuously.
	TARE RESET 1. Remove the Set TARE function. - If you press this key, TARE set value will be removed and display gross weight.
	Hold the Weight display when indicator detects "Peak Hold", or "Sample Hold". ※ You can select "Hold" function on F10. First input : HOLD is set Second input : HOLD Reset
	Under "TARE" setting, you can select weight display mode. First input, Gross Weight will be displayed, second input, Net weight will be displayed. ※ This key will be activated only under "TARE" set.
	You can set each weighing process as a certain P/N. And you can call certain P/N with pressing this key. P/N save : Select P/N and Enter key input. P/N call : P/N + Number key + Enter
	Print out All Part Nos' weighing data will be printed. (Grand Total Data Print Out)
	Current Part No.'s weighing data will be printed. (Sub Total Data Print Out)

	No. specific function
	**1. Manual Print** Whenever press this key, you can print out. **2. 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. **※Decimal Point set will be done in the calibration mode.**
	1. Enter "F-Function / Test mode" 2. set the Function No, in F-Function mode.
	1. Modify the set value during setting process. 2. Calibration mode - Move back to previous step. 3. F-function setting mode - Change F-function No. F-function no.(number key) + Clear → directly move to that F-function 4. Function key : Sub-total, Grand-total manual delete.
	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
	**Enter/Exit to "Calibration" mode.** First time press "CAL. Button", enter the calibration mode. And automatically exit, when calibration is finished.

※ Function Keys (Combined Key functions)

		Delete "Gross-Total data"
		Delete "Sub-Total data"

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

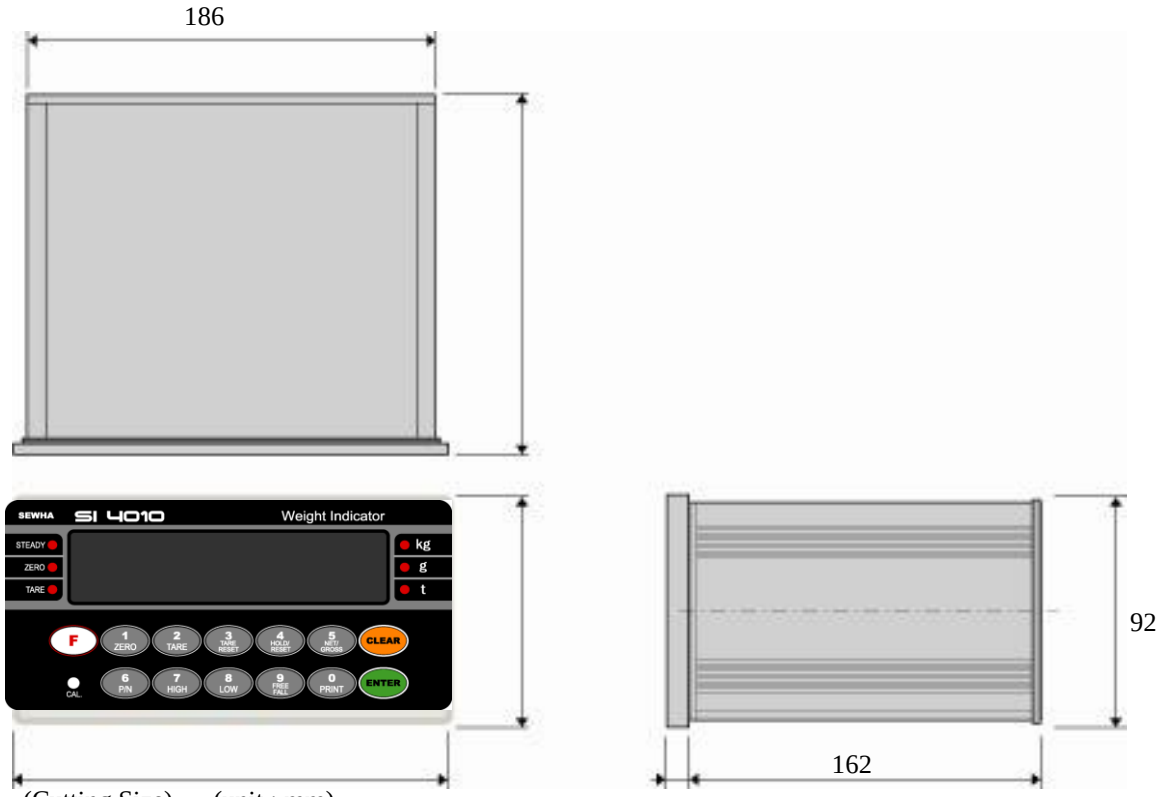
⑥ External Input : External control input for wired remote control.

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

4. INSTALLATION

4-1. External Dimension & Cutting Size

(External Dimension) (unit : mm)



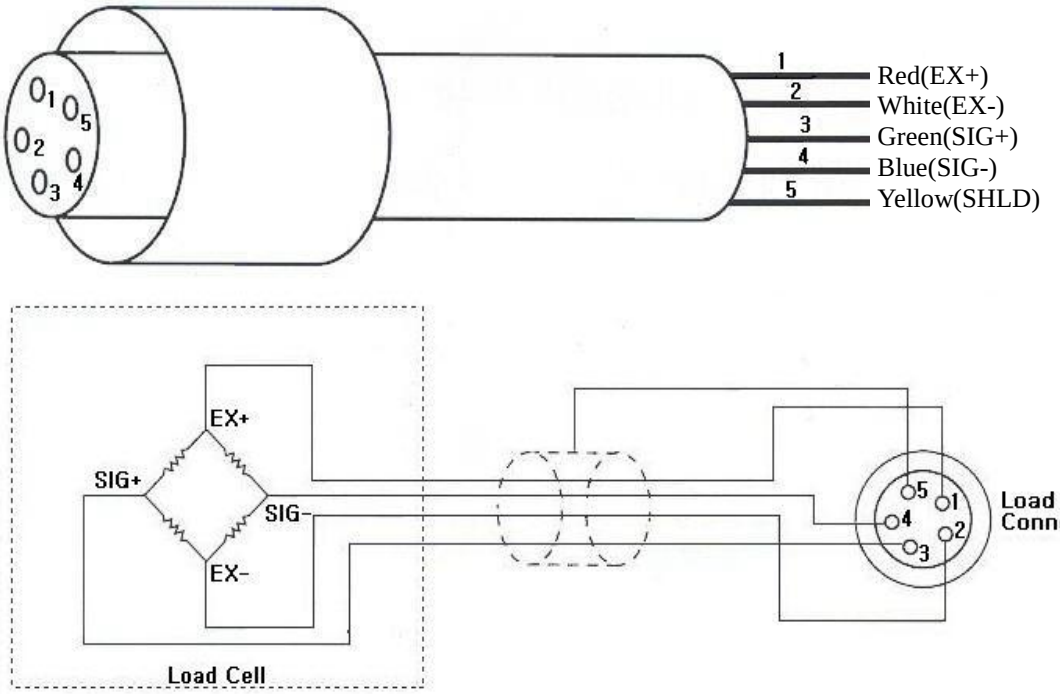
(Cutting Size) (unit : mm)

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 4010" 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 : 5V

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 : 5V

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.

5. SET-UP

5-1. Calibration

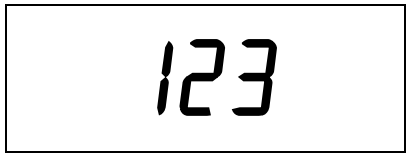
Adjust weight balance between "Real weight" on the load cell(Weight Part) and "Displayed weight of Indicator". When you replace LOAD CELL or Indicator, you have to do Calibration process once again

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

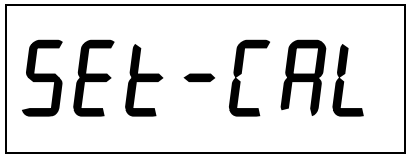
※remarks : In case that "P-W" is displayed, you have input the pass word to start calibration mode.

Prepare At least 10% of Max. capacity of your weighing scale, and remove **"CAL-BOLT"** on the Front panel and press **"CAL - LOCK S/W"** inside.

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

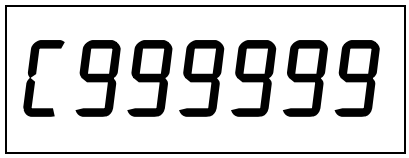


2. And press "CAL - LOCK S/W" inside.
   Check the "SET-CAL. Massage on display.

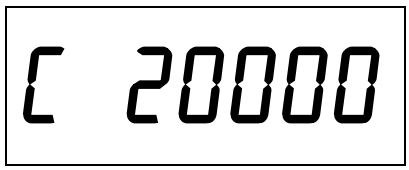


※ For the save the each step, press ENTER key, for the cancel or move back, press CLEAR key.

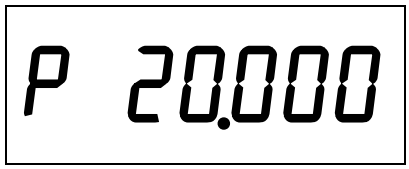
3. If you press ENTER key, Calibration Mode starts.
   After displaying "CAPA",



4. Please input Max capacity of your weighing scale,
   And press ENTER key.
   Ex) Load cell CAPA : 20kg, division : 0.001 → Input 20000



5. Define the optimal position or Decimal point
   Whenever pressing 0 PR key, Decimal point will be changed.
   Ex) Load Cell CAPA : 20kg, division : 0.001kg → input 20.000



6. Press 

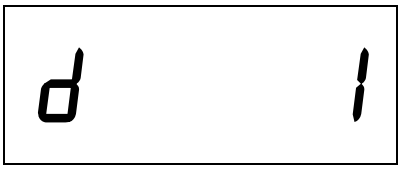
key to save and move to next step.

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

Whenever pressing 

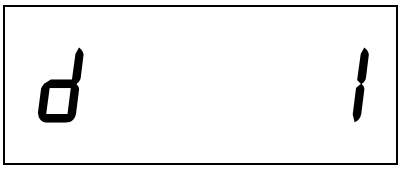
key, the Digit/Division value will be changed like "1 → 2 → 5 → 10 → 20 → 50" .

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



8. press 

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



※ Caution

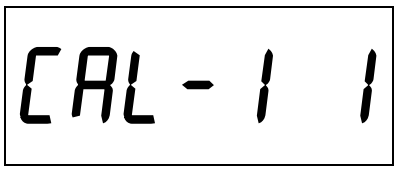
(Max. capacity value / division value) cannot be over **20,000**.(as Indicator resolution is 1/200,00).

If the value is over 20,000, Error message **" Err 01 "** will be displayed and move back **"CAPA"** mode again.

9. When you press 

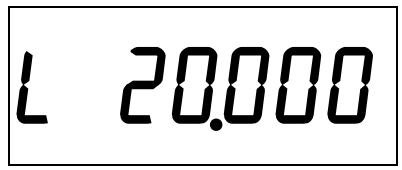
key, the indicator starts to find "Zero" condition.

10. Indicator will search "DEAD weight" during 5sec, automatically.
After finding optimal "Zero" value, automatically move to next step.



※ Caution : At this step, if there some force or Vibration on Weighing scale, and unstable condition will be continued, **"ErrorA"** will be display, and "DEAD value" will not be calculated.
Under this condition, please remove force or vibration and process it again.

11. Span Calibration mode starts..



12. Input “Test weight” capacity. And press 

key.

Ex) Load Cell CAPA : 20kg, division 0.001

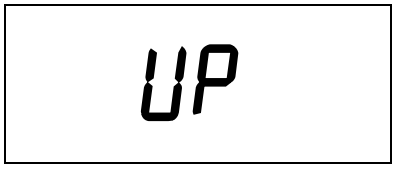
→ Use test weight(at least 2kg) which is 10% of max CAPA(20kg)

→ input test weight 2.000

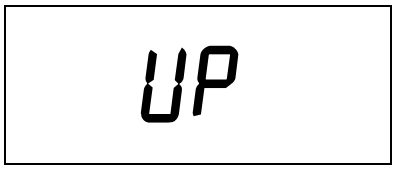
13. After displaying “UP” Load “Test Weight”

Ex) Load Cell CAPA : 20kg, division 0.001

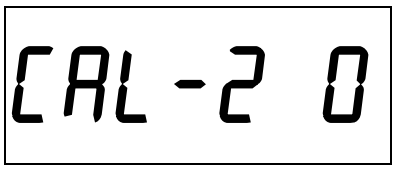
→ Use test weight(at least 2kg) which is 10% of max CAPA(20kg)



14. And press 
key.(Do not unload test weight)

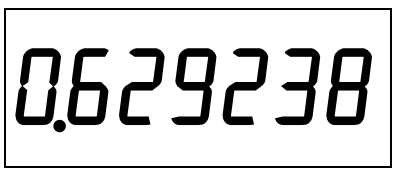


15. Indicator will calculate span value during 5sec, automatically



16. After calculation, span value displays on the display.

Please unload the test weight.



※ 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 weight of Max. capacity.

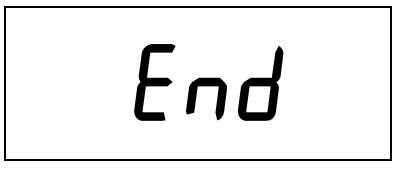
We programmed the calibration will not be done, when you load less than 10% of max. capacity.

17. Press 

key to save all calibration process.

After then it resets automatically.

(Now, fasten the Calibration Bolt.)



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

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

This calibration mode uses "Load cells' max. capacity" and "Max. Output Rate(mV)", the weight adjustment degree might be less than "Test weight Calibration".

The guaranteed resolution of this "Simulation Calibration" is 1/3,000.

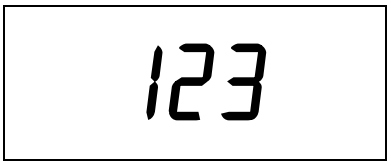
Remove **"CAL-BOLT"** on the Front panel and press **"CAL - LOCK S/W"** inside.

Then, you can enter the Calibration Mode with SET-CAL and press 

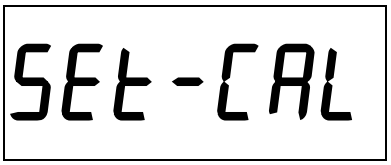
key to enter "**Simulation Calibration Mode"** with "CELL CAL" and start calibration mode with pressing 

key.

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



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



3. Please press 

key, To start Simulation Calibration Mode

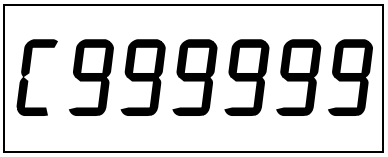
※ For the save the each step, press 

key, for the cancel or move back, press 

key.

4.Press 

key to enter calibration mode.
After displaying "CAPA", you may set Max capacity..

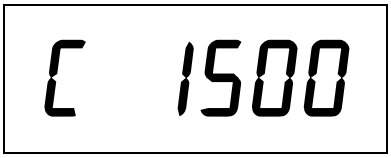


5. After input Max capacity of your weighing scale (at the label),

press 

key

Ex) Load cell CAPA : 15kg, division : 0.05 → Input 1500



※ Caution

If the plural No. of load cells are installed, please make sum the all load cells capacity and input.

Ex) There are 4pcs of load cells are installed, and each load cell's Max. capacity is 1,000kg.

Then, total Max. Capacity will be 4,000kg and you have to input 4,000kg.

6. define the optimal position or Decimal point

Whenever pressing 

key, Decimal point will be changed.

7. Press 

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

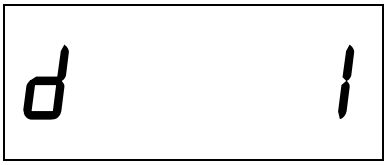
Ex) Load cell CAPA : 30kg, division : 0.01 → Input 30.00

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

Whenever pressing 

key, the Digit/Division value will be changed like 1→ 2→5→10→20→50

Ex) Load cell CAPA : 30kg, division : 0.01 →Input division "5"



9. press 

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

※ Caution : (Max. capacity value / division value) cannot be over **20,000**.(as Indicator resolution is 1/200,00).

If the value is over 20,000, Error message **" Err 01 "** will be displayed and move back **"CAPA"** mode again.

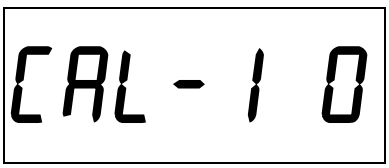
10. Under this step, measure the "DEAD Weight of Weighing Scale

When you press 

key, the indicator starts to find "Zero" condition.

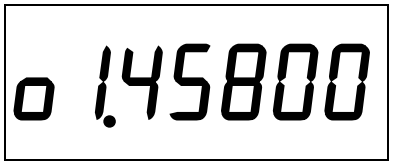
11. Indicator will search "DEAD weight" during 5sec, automatically.

After finding optimal "Zero" value, automatically move to next step.



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 output rate : 1.458 mV/V



※ Caution

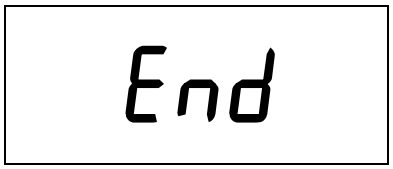
Due to some variation between **"State output rate"** and **"Real Output rate"** of load cell, there might be some weight difference after finishing calibration.

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 inputing the value press ENTER key.
Calculated "Span value" will be displayed.

15. Press ENTER key to save all calibration process and Off the "CAL LCK S/W" 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 200,00 ~400,000)

5-4. Set-up

Set-up means set the F-function and make SI 4000 weighing controller will perform more accuracy.

(Considering external / internal environmental condition)

※remarks : In case that "P-W" is displayed, you have input the pass word to start calibration mode.

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 "F11-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 Detailed information

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

Weight-Back up selection				
F02	●	0	Normal Mode	
		1	Weight Back up Mode	
Motion Band Range setting				
F03	06	1 ∫ 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	2	0 ∫ 9	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	13	AB	A : Frequency Filter setting value (0~3) (0 : about 200Hz/sec, 1 : 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)	
	Caution : If you set over 20% , there may be "CELL-Err" or displaying wrong value.			

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			
"Hold" Mode selection						
F10	●	0	Peak Hold : Measure Max. weight value and hold on display.			
		1	Sample Hold : Hold current weight until "Hold Reset".			
External Input Selection						
F11	**Set Value**		**Input 1**	**Input 2**	**Input 3**	**Input 4**
		0	Zero	Tare	Tare Reset	Print
	●	1	Zero	Tare / Reset	Hold	Hold Reset
		2	Zero	Tare / Reset	Print	Sub Print
		3	Zero	Print	Hold	Hold Reset
"STEADY" condition check time setting						
F12	3	1 ∫ 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 1sec)						
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			
Auto TARE Reset time setting						
F14	00	00 ∫ 99	Automatic "Tare" reset time setting 00 : not use 05 : after 5.0sec, Tare will reset.			

Auto HOLD Reset time setting			
F15	00	00~99	Automatic “HOLD” reset time setting. 00 : not use , 05 : after 5.0sec, Tare will reset.
Auto Print Delay time setting			
F16	00	00 ∫ 99	Auto Print Delay time setting. 00 : There is no Delay 30 : After 3.0sec auto print out., when the weight is steady over than Empty range.
Equipment No. setting			
F18	01	01~99	Equipment No. setting with No. key. (01 ~99 settable)
“Key Tare” selection			
F19	●	0	Key Tare Not Use
		1	Key Tare Use

■ 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
"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	Steady Mode : When the Weight is steady over than EMPTY ※ F-80 : **EMPTY Range setting**
		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 the Weight is steady over than EMPTY ※ F-80 : **EMPTY Range setting**
Transferred Weight DATA Byte selection			
F40	●	0	7 Byte data Transfer
		1	8 Byte data Transfer

※CAS format DATA transference(F37-02) only applies 7byte.

■ 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

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	0	0~9	Whenever set value increased, 1line will be added.
Paper Withdraw Rate setting (After Continuous/Single Print)			
F46	0	0~9	Whenever set value increased, 1line will be added.
Printing Language Selection (If you install on Standard Serial Port)			
F47	●	0	KOREAN
		1	ENGLISH
Minus(-) symbol Print selection			
F49		0	Print minus(-) symbol, if the weight is minus(-).
	●	1	Ignore minus(-) symbol
Function / Clear key Activation display selection			
F51	●	0	Activation display not use
		1	Activation display use
Communication Interval Setting			
F53	●	0	Fast Speed (The interval is short)
		1	Low Speed (The interval is long)
Analogue Output Setting (4~20mA / Option)			
F54	●	0	Positive Output (Max. Capacity : 20mA output)
		1	Negative Output (Max. Capacity : 4mA output)
Pass Word Using setting (F95 Change Password)			
F55	●	0	Not used
		1	Using
Protocol Frame Transit Setting			
F56	●	0	Not Used
		1	Using (When connecting protocol with an appliance which uses frame by frame.)
	Caution : When setting Command frame, if F53(protocol frequency) is high the speed of system can be slow. In this case, please set F53-01.		
BCD INPUT Type Setting (Refer to Interface BCD INPUT)			
F57	●	0	Input the units digit & the tens digit one by one. (1,2,4,8)(1,2,4)

		1	Input the units digit & the tens digit together (1,2,4,8,16,32)
Print Format Setting (Refer to Print Interface)			
F58	●	0	Format 1
		1	Format 2(Under F42, There is no division about continuous print or single print)
			Format3(Net gross print)

■ Other Setting

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 SUB ", " 9 " 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	
SETUP Mode Password Key Setting / Change		
F95	How to set :" If "P-W" display, input the previous saved password . Then, "1" display : input 4 numbers , "2" display : input the 4 numbers once more. (recheck the password) Factory default set value**: 0000** **Please don't forget your pass word.**	
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)

Parity Bit selection Mode					
F60	●	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					
F61		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					
F62	●	0	Simplex Mode / Stream Mode		
		1	Duplex Mode / Command Mode		
“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.		
DATA Transference Mode selection (Under F62-00, F65-00 setting, only)					
F66	●	0	Stream Mode : Weighing Data will be transferred continuously.		
		1	Steady Mode : When the Weight is steady over than EMPTY		
		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		

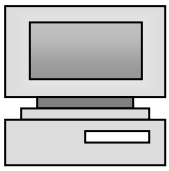
6. INTERFACE

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 D-type Male)

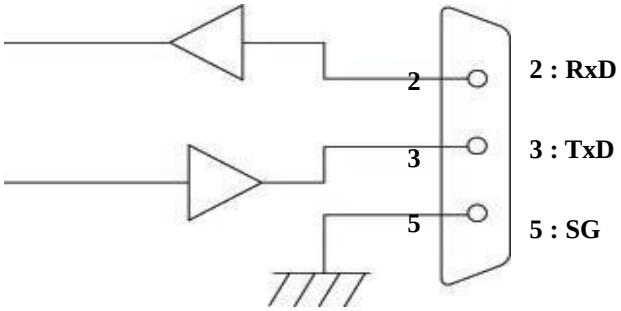
2 : RxD ---------- TxD : 3

3 : TxD ---------- RxD : 2

5 : SG ---------- SG : 5

SI 4010

6-1-2 RS-232C Circuit



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

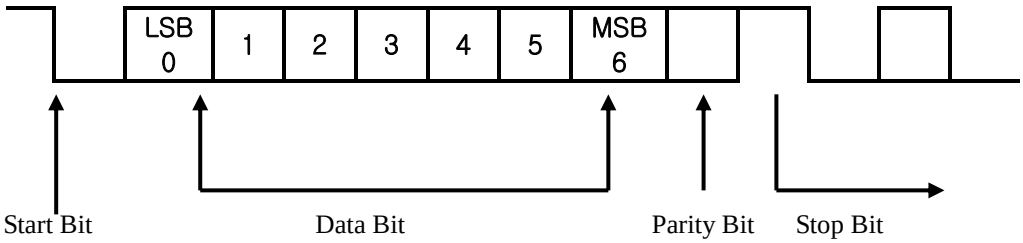
STX 02H

ETX 03H

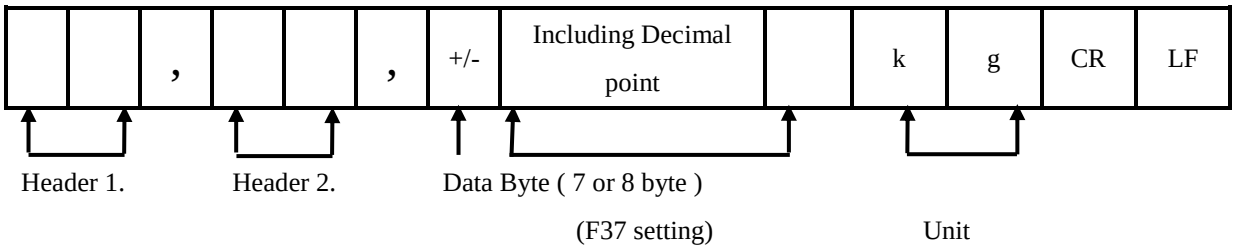
CR 0DH

LF 0AH

⑧ Check-Sum (Error Detecting, "F-Function 34")



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



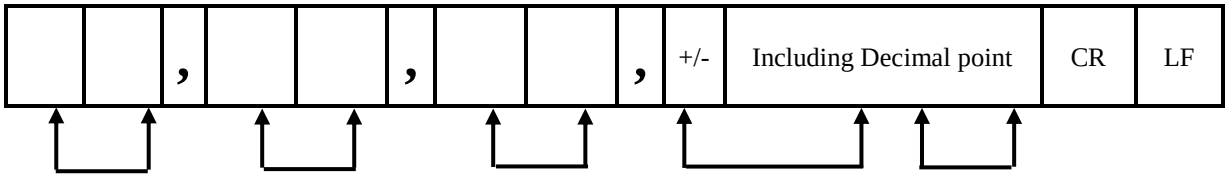
① Header 1. : OL : Over Load, Under Load
ST : Display weight "Steady"
US : Display "Un-Steady"

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)



ID Number
Header 1
Header 2
Data Byte
(7 or 8 byte)
(F37 setting)
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

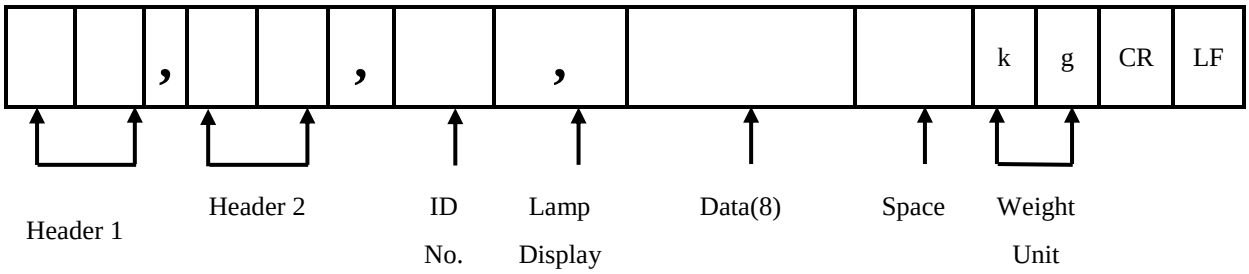
2D(H) : "-" Minus

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



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

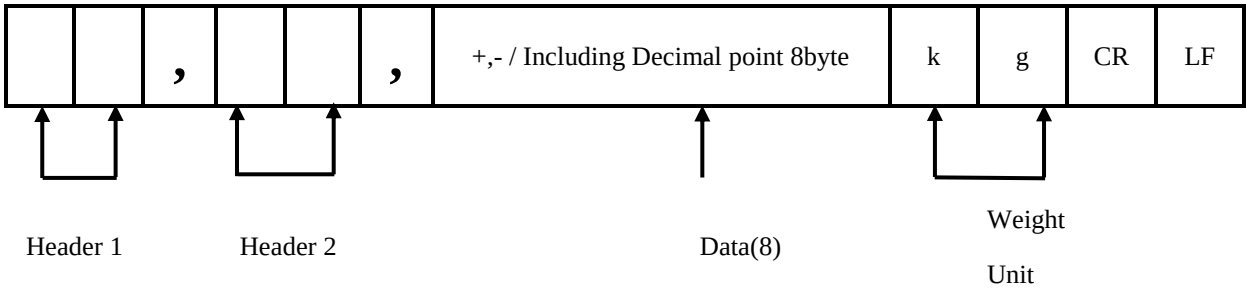
2D(H) : "-" Minus

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. Communication with Other Devices (Remote Display / External Display)

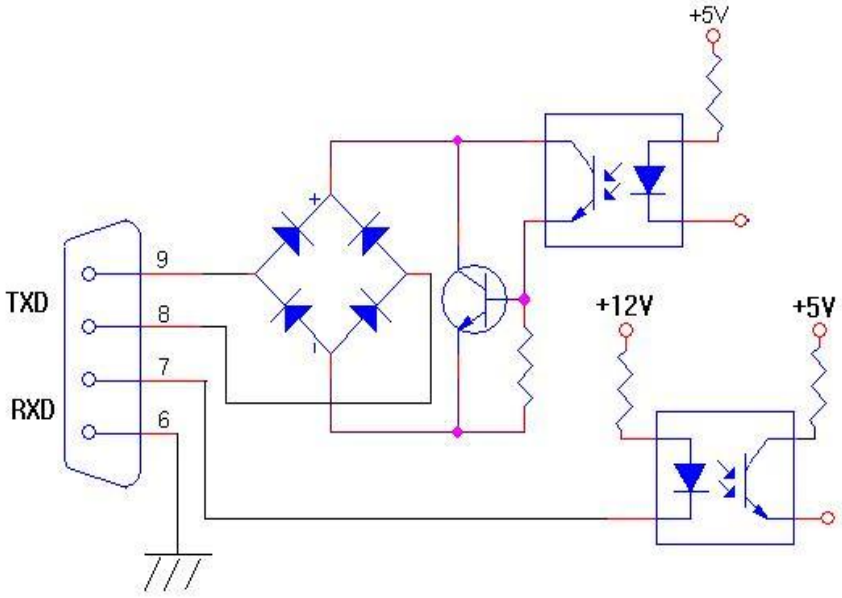
3 : RxD TxD : 8

4 : RxD TxD : 9

Remote Display
(External Display)

SI 4010

6-2-2. Current Loop Circuit



6-2-2. Data Format

As same as "RS-232C" Interface

6-3. Analog Output Interface (Option 02 : 0~10V Output)

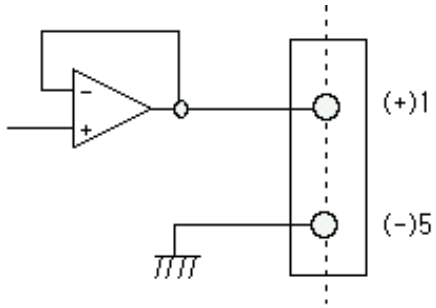
This Option card converts weight value to Analog Voltage output(0~10V) and transfers to external devices(Recorder, P.L.C), controlled by voltage output.

6-3-1. Specification

①. Output Voltage : 0~10V DC output

②. Accuracy : More than 1/1,000

6-3-2. Circuit



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

6-3-3. 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.

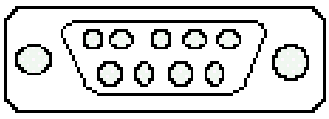
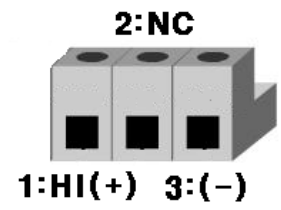
②. If you need additional adjustment, please adjust with "VR1(Zero)", "VR2(Span) on the Analog Output PCB.

※ 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.

6-4-4. 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.

6-4. 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.

6-4-1. Specification

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

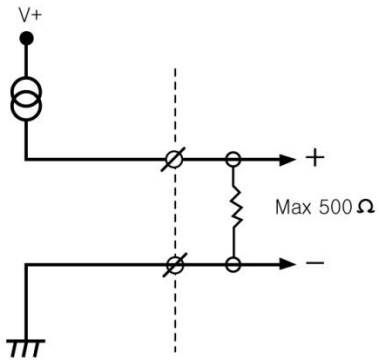
②. Accuracy : More than 1/1,000

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.

6-4-2. Circuit



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

6-4-3. 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".

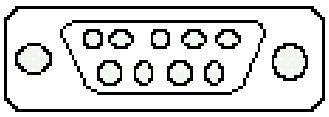
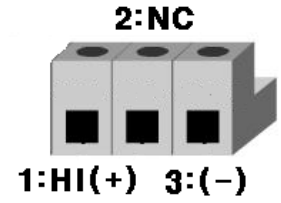
② If you need additional adjustment, please adjust with "VR1(Zero)", "VR2(Span) on the Analog Output PCB.

※ 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.

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

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

6-5. 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.

6-5-1. Signal Format

①. Type : RS-422/485

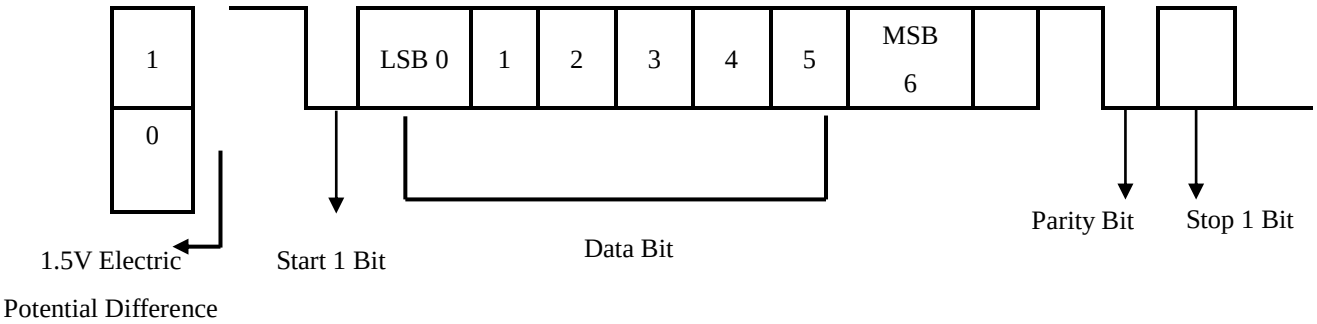
②. Format : Baud Rate : Refer "F-function 31".

Data Bit : 7 or 8(No Parity)

Stop : 1

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

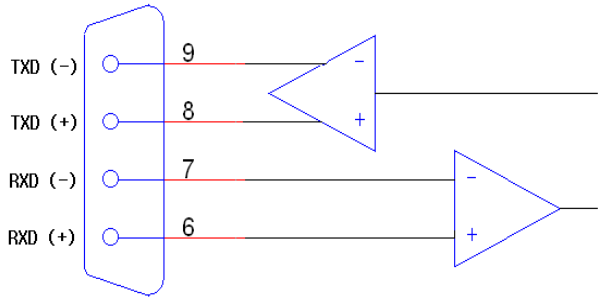
Code : ASCII (STX 02H, ETX 03H, CR 0DH, LF 0AH)



6-5-2. Data Format

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

6-5-3. 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**
	

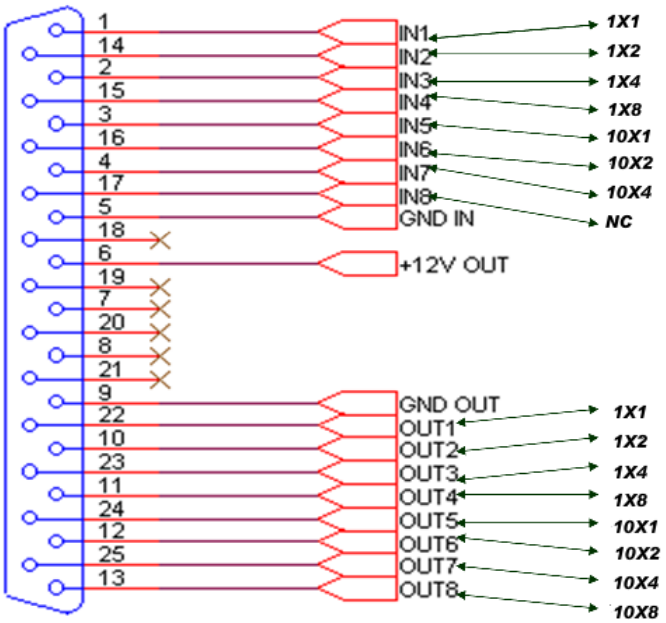
Terminal Block	1	2	3	4
RS-232	TX	RX	GND	GND
RS-485	RTX+	RTX-	NC	NC
RS-422	RXD+	RXD-	TXD+	TXD-

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

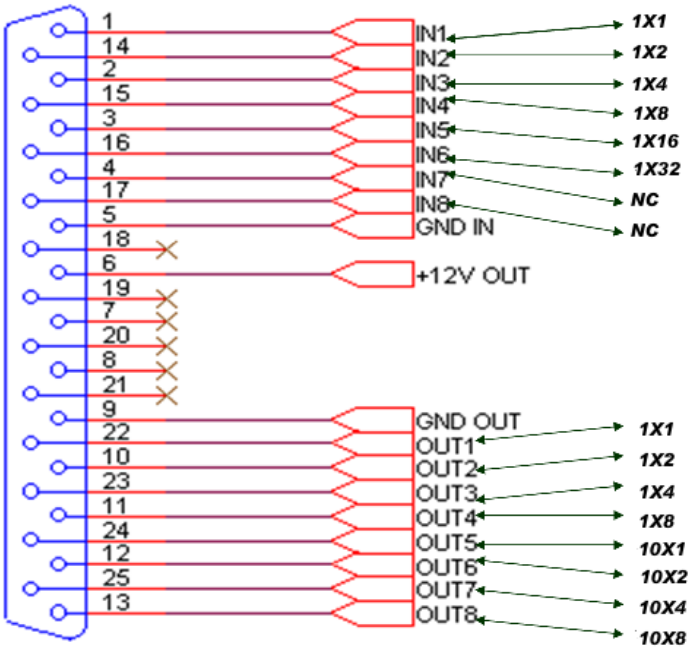
This “BCD interface” option card can be applied on PLC (Programmable Logic Controller), or Score Board applications.

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

→Setting F56-00



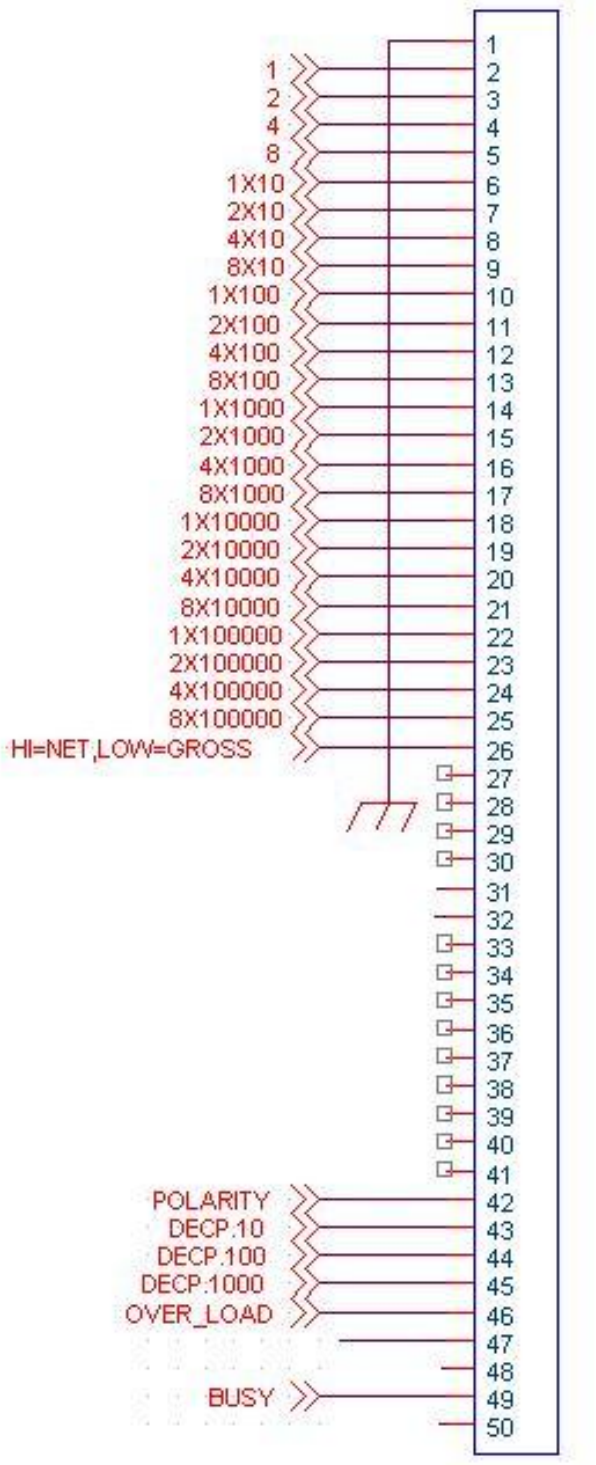
→Setting F56-01

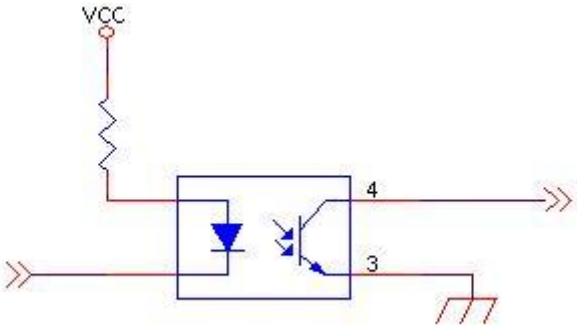


6-7. BCD Output Interface(Option 06)

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

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





6-8. Print Interface

6-8-1. Print Format < 30 Column only. >

Format 1 (F58-00)

Single Print Format

```
Date : 2008-05-10
Time : 14:38:33
P/N     Code      S/N    Weight
04      000001     1      1.000kg
========================
Date : 2008-05-10
Time : 14:40:33
P/N     Code      S/N    Weight
04      000001     2      1.000kg
========================
```

Continuous Print Format

```
Date : 2008-05-10
Time : 14:38:33
P/N     Code      S/N    Weight
04      000001     1      1.000kg
04      000001     2      1.000kg
04      000001     3      1.000kg
04      000001     4      1.000kg
04      000001     5      1.000kg
04      000001     6      1.000kg
04      000001     7      1.000kg
```

Sub-Total Print Format

```
          Sub-Total
Date : 2008-05-10
Time : 14:38:33
Part Number :          04
Total Count :        10000
Total Weight :  10000.000kg
```

Grand-Total Print

```
          Grand-Total
Date : 2008-05-10
Time : 14:38:33
PART      SERIAL     TOTAL-W
 04          5       500.000kg

Total Part :           04
Total Count :        10000
Total Weight :  10000.000kg
```

Format 2 (F58-01)

```
==========================
 DATE,TIME : 09-10-26 14:43:39
 SERIAL    :          01
 GROSS     :    3.000 kg
 TARE      :    1.000 kg
 NET       :    2.000 kg
 |
==========================
```

Format 3 (F58-02)

```
    Date : 2010.09.15
    17:30   NET :     218 kg
    17:31   NET :     716 kg
    17:32   NET :     717 kg
    17:33   NET :     717 kg
    17:34   NET :     717 kg
    17:35   NET :     717 kg
    17:36   NET :     717 kg
  ==========================
  TOTAL : 26450 kg
```

6-9. Command Mode

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

Current weight	
ASCII : STX ID(2Byte) RCWT ETX	**HEX :** 02 30 31 52 43 57 54 03 (ID No.: 01)
SI4010 REPONSE	STX ID NO. RCWT **State1(2byte)**, **State2(2byte)**,+/- **Current weight (7/8byte)** **Weight unit (2byte)** ETX
	State1 : OL(Over load) , ST(Steady), US(Unsteady) **State2 : NT(Gross weight), GS(Net weight)**
Indicator Memory Data	
ASCII : STX ID(2Byte) RCWD ETX	**HEX :** 02 30 31 52 43 57 44 03 (ID No. : 1)
SI4010 REPONSE	STX ID NO. RCWD **date (6byte) time (6byte) P/N(2byte) S/N(6byte) Tare value (7/8byte) Current weight (7/8byte) Weight unit (2byte)** ETX
SUB-Total Data	
ASCII : STX ID(2Byte) RSUB ETX	**HEX :** 02 30 31 52 53 55 42 03 (ID No. : 1)
SI4010 REPONSE	STX ID NO. RSUB **P/N(2byte)** Accumulated sub-total Count **(6byte) Accumulated weight value(11byte) Weight unit (2byte)** ETX
GRAND Total Data	
ASCII : STX ID(2Byte) RGRD ETX	**HEX :** 02 30 31 52 47 52 44 03 (ID No. : 1)
SI4010 REPONSE	STX ID NO. RGRD **P/N(2byte) Accumulated count (6byte) Accumulated weight (11byte) weight unit (2byte)** ETX
S/N Data (Accumulated Data)	
ASCII : STX ID(2Byte) RSNO ETX	**HEX :** 02 30 31 52 53 4E 4F 03 (ID No. : 1)
SI4010 REPONSE	STX ID NO. RSNO **Accumulated count (6byte)** ETX
Current Time	
ASCII : STX ID(2Byte) RTIM ETX	**HEX :** 02 30 31 52 54 49 4D 03 (ID No. : 1)
SI4010 REPONSE	STX ID NO. RTIM **Current Time (6byte)** ETX
Current Date Data	
ASCII : STX ID(2Byte) RDAT ETX	**HEX :** 02 30 31 52 44 41 54 03 (ID No. : 1)
SI4010 REPONSE	STX ID NO. RDAT **Current Date (6byte)** ETX
Tare Data	
ASCII : STX ID(2Byte) RTAR ETX	**HEX :** 02 30 31 52 54 41 52 03 (ID No. : 1)
SI4010 REPONSE	STX ID NO. RTAR **Tare Data (7/8byte)** ETX
P/N Data	
ASCII : STX ID(2Byte) RPNO ETX	**HEX :** 02 30 31 52 50 4E 4F 03 (ID No. : 1)
SI4010 REPONSE	STX IN NO. RPNO **P/N Set value(2byte)** ETX

6-8-2. Write Command

To make Current Weight as Zero		
ASCII : STX ID(2Byte) WZER ETX		**HEX :** 02 30 31 57 5A 45 52 03 (ID No. : 01)
SI4010 response	Normal : ACK	Error : NAK
TARE		
ASCII : STX ID(2Byte) WTAR ETX		**HEX :** 02 30 31 57 54 41 52 03 (ID No. : 01)
SI4010 response	Normal : ACK	Error : NAK
TARE Reset		
ASCII : STX ID(2Byte) WTRS ETX		**HEX :** 02 30 31 57 54 52 53 03 (ID No. : 01)
SI4010 response	Normal : ACK	Error : NAK
TIME Setting		
ASCII : STX ID(2Byte) WTIM Time data**(6byte)** ETX		**HEX :** 02 30 31 57 54 49 4D 31 32 30 30 30 30 03 (ID No. : 01)(Time data : 12:00:00)
SI4010 response	Normal : ACK	Error : NAK
DATE Setting		
ASCII : STX ID(2Byte) WDAT **Time data (6byte)** ETX		**HEX :** 02 30 31 57 44 41 54 30 39 30 39 30 34 03 (ID No. : 01)(Time data : 09/09/04)
SI4010 response	Normal : ACK	Error : NAK
P/N Change		
ASCII : STX ID(2Byte) WPNO **P/N data (2byte)** ETX		**HEX :** 02 30 31 57 50 4E 4F 31 31 03 (ID No. : 01)(P/N data : 11)
SI4010 response	Normal : ACK	Error : 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.oad cell broken 2.oad cell isolation resistance error 3.eighing part touches other devices or some weight is on the weighing part 4.Suming 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 "EX+" and "EX-" is about 350Ω~450Ω. 2. Output Resistance of "EX-" and "EX+" is about 350Ω. 3. Isolate Resistance is more than 100Ω
Weight Value is increased regular rate, but not return to "Zero"	1.oad cell Error 2.oad 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" display	1.ad cell broken or Indicator connection Error 2.oading over than Max. Capacity	1. Load cell Check 2.Load cell connection Check 3.emove over loaded weight	

7-2. Calibration Process

Error	Cause & Treatment
Err 01	When {Max.capacity/digit} value is over 20,000
Err 04	Standard weight value is over than Max. Capacity
Err 05	Standard weight value is less 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
Err 07	1. Amp. Gain is too small 2. Sig+ and Sig- wire connection error 3. Test weight is not loaded
Err 08	Under "F-function" mode, set value is "N.A"
Err A	When there is continuous vibration on the weighing part,, indicator cannot process calibration.

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	1. Under "TEST" mode 1, check analogue value. If you cannot 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.	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.
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 consist 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 (F-KEY : Zero, 1-KEY : Return)	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 unstable, 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.

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.** 302, 102dong, Ssangyong 3rd, Bucheon Techno Park, Samjeon-Dong, Ojeong-Gu, Bucheon City, GyungGi-Do, KOREA **Made in KOREA**	**Product**	Digital Weighing Indicator
	Model	SI 4010
	Serial No.	
	AUTHORIZED STAMP	Sewha CNM Co.,Ltd