Digital Weighing Controller
SI 4010

Instruction Manual

SEWHACNM
WEIGHING SOLUTION

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

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1-4. Inquiries

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

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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

⚠ **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	0.2μV / Digit
Load Cell Excitation	DC 10V (- 5V ~ + 5V)
Max Input Signal	Max3.2mV/V
Temperature Coefficient	[Zero] ±20PPM/℃ [Span] ±20PPM/℃
Input Noise	±0.3μV 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.
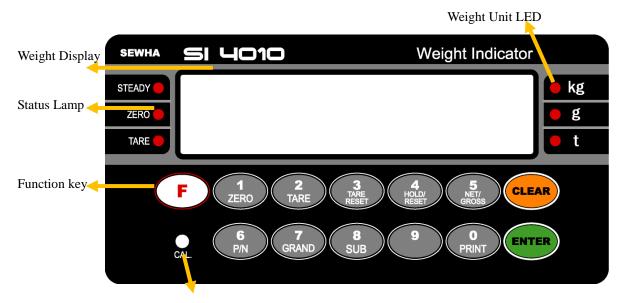
3-4. Option Card

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)

Calibration Lock Key

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

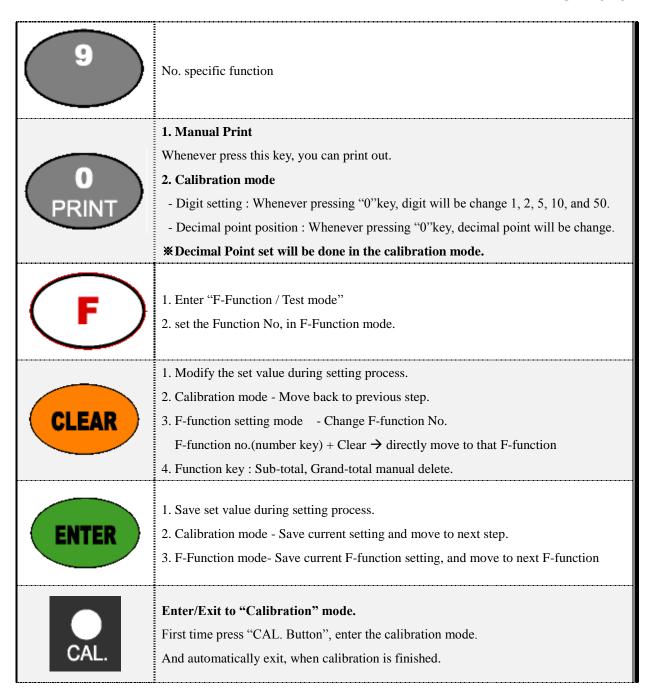|	
1 ZERO	Make Weight value as Zero. Under F08, you can set the Zero key operation range, as 2%, or 5%, or 10%, or 20% of Max Capacity. ※ Under "Tare" key input, Zero key will not be activate within operation range.
2 TARE	Make Weight value as Zero, including Tare Weight. Under F09, you can set the Tare key operation range, as 10%, 20%, 50%, or 100% of Max Capacity. ※ Whenever pressing "Tare" key, you can set the Tare continuously.
3 TARE RESET	TARE RESET 1. Remove the Set TARE function. - If you press this key, TARE set value will be removed and display gross weight.
4 HOLD/ RESET	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
5 NET/ GROSS	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.
6 P/N	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
7 GRAND	Print out All Part Nos' weighing data will be printed. (Grand Total Data Print Out)
8 SUB	Current Part No.'s weighing data will be printed. (Sub Total Data Print Out)

9	No. specific function

0 PRINT	**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.**

F	1. Enter "F-Function / Test mode" 2. set the Function No, in F-Function mode.
CLEAR	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.
ENTER	1. Save set value during setting process. 2. Calibration mode - Save current setting and move to next step. 3. F-Function mode- Save current F-function setting, and move to next F-function
CAL.	**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)

CLEAR	**7 GRAND**	Delete "Gross-Total data"
CLEAR	**8 SUB**	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.

  ※ **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)

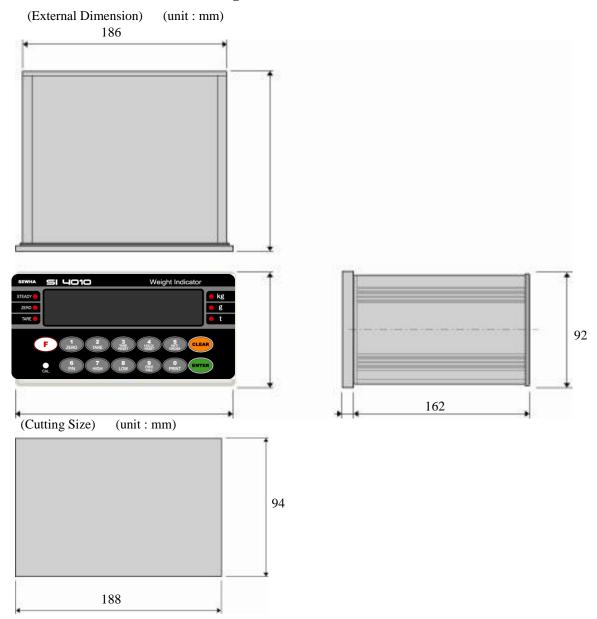④ LOAD CELL Connector (N16-05)

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
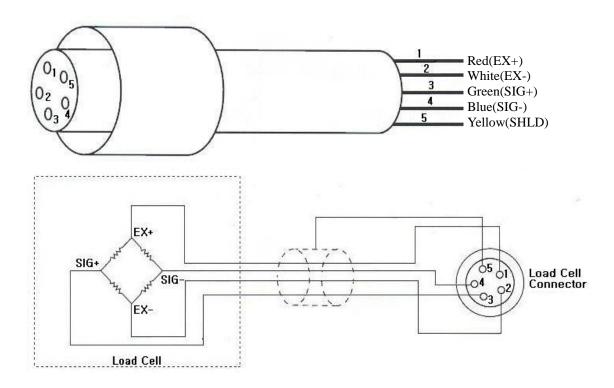
4-1. External Dimension & Cutting Size

(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

1	Red(EX+)
2	White(EX-)
3	Green(SIG+)
4	Blue(SIG-)
5	Yellow(SHLD)

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 $0.2\mu V$ / 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.

Cautions

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

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 $0.2\mu V$, 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 $0.2\mu V$, so this system has no problem.

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.

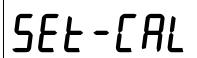Remove **"CAL-BOLT"** on the indicator's front panel and press **"CAL - LOCK S/W"** inside.

※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	123

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

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

3. If you press **ENTER** key, Calibration Mode starts. After displaying "C999999",	$C999999$

4. Input the max capacity of your weighing scale, And press **ENTER** key. Ex) Load cell CAPA : 20kg, division : 0.001 → Input 20000	$C\ 20000$

5. Define the optimal position of decimal point. Whenever you press **0 PRI** key, the location of decimal point will be changed. Ex) Load Cell CAPA : 20kg, division : 0.001kg → input 20.000	$P\ 20.000$
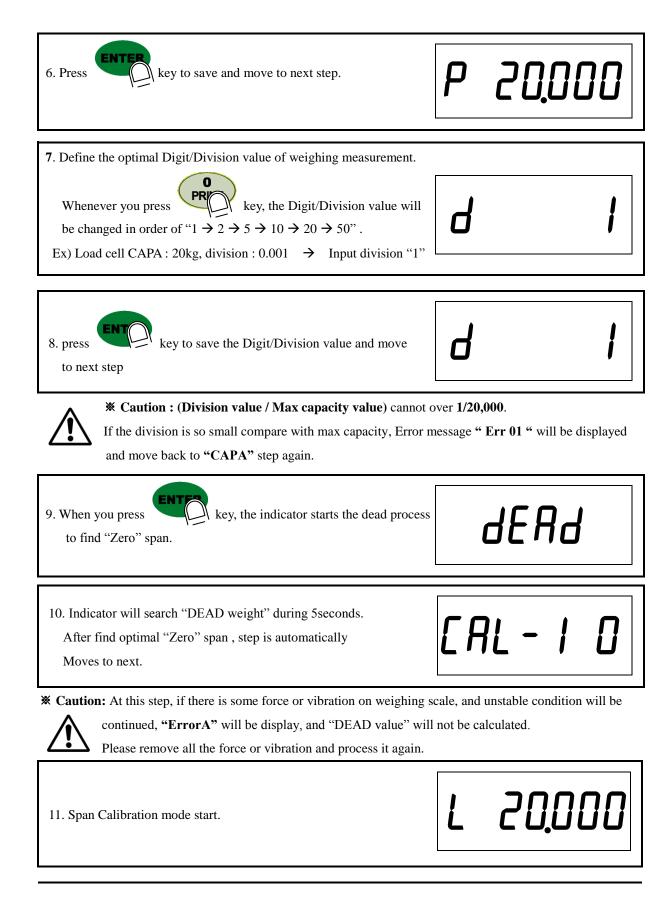
6. Press [ENTER] key to save and move to next step.

$$P \ 20.000$$

---

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

Whenever you press [0 PRI] 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"

$$d \qquad 1$$

---

8. press [ENT] key to save the Digit/Division value and move to next step

$$d \qquad 1$$

⚠ ※ **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.

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9. When you press [ENTER] key, the indicator starts the dead process to find "Zero" span.

$$dEAd$$

---

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

$$CAL - 1 \ 0$$

⚠ ※ **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 start.

$$L \ 20.000$$

12. Input the weight of your "Test weight". And press **ENTER** key.

Ex) Load Cell CAPA : 20kg, division 0.001

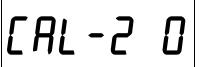→ Use test weight which is at least 10% of

max CAPA(20kg) = minimum 2kg of test weight is needed.

→ Input test weight 2.000 to indicator.

`L 2.000`

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

`UP`

14. And press **ENTER** key.

→ Do not remove the test weight from weigh bridge.

`UP`

15. Indicator will calculate span value during 5sec.

`CAL-2 0`

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

Please remove the test weight from weigh bridge.

`0.629238`

※ **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 **ENTER** key to save all calibration process.

After then it resets automatically.

Now, fasten the Calibration Bolt on the front panel.

`End`

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

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

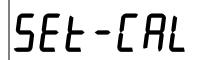This calibration mode uses "Load cells' max capacity" and "Rated output value(mV)".

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

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

1. At normal mode, remove "CAL-BOLT" on the Front panel	`123`

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

3. Press [1 RUN STOP] key, to start Simulation Calibration Mode	`CELLCAL`

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

4. Press [ENTER] 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.)	`C999999`

5. After input max capacity of your load cell (at the label), press [ENT] key Ex) Load cell CAPA : 30kg, division : 0.01 → Input 3000	`C  3000`

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

Then, total Max Capacity will 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 [0 PR] key, the location of decimal point
will be changed.

$$P \quad 30.00$$

7. Press [ENTER] key to save Digit / Decimal point and
move to next step.

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

$$P \quad 30.00$$

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

Whenever you press [0 PR] 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"

$$d \quad 1$$

9. press [ENTER] key to save the Digit/Division value and
move to next step.

$$d \quad 1$$

⚠ ※ **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. Under this step, measure the "DEAD Weight of Weighing Scale

When you press [ENTER] key, the indicator starts the dead process
to find "Zero" span.

$$dEAd$$

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

$$CAL-10$$

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

`CELLOUt`

13. Input Load cell Output Rate(mV/V) (refer the load cell label)

   Ex) Load cell Related output : 1.989 mV/V

`o 1.98900`

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

If you want to make more precise weighing process, please measure real output rate of load cell and input the measured value. Then the weight measurement will be more precise than before.

14. After inputting R.O. value, press ⬤ENTER key.

   Calculated "Span value" will be displayed.

`0.087234`

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

`End`

⚠ ※ **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 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 **F** 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 **F** 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 **F** key.

Ex.) If you want to call "F11-XX " directly under "F-function mode".

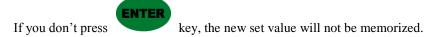**Press " 1 ZERO " and " 1 ZERO " key and press F key.**

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 **ENTER** key to save.

If you don't press **ENTER** 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 " 0 PRINT " and " 2 TARE " key.

And press ENTER key to save.

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

Under "F-function" mode, press **CLEAR** key, you can move back to "F-Test" mode.

Under "F-Test" mode, press **CLEAR** 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	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	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			
	Set Value	**Input 1**	**Input 2**	**Input 3**	**Input 4**
F11	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	01	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 (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	00	00~09	Whenever set value increased, 1line will be added.
Paper Withdraw Rate setting (After Continuous/Single Print)			
F46	00	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
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.
Minimum Analog Output Setting		
F81		Minimum analog output value is able to adjust to be 4mA or 0V. (Minimum value is 0) Number key '1' : Move to left, '2' : Move to right, '3' : Increase value
Maximum Analog Output Setting		
F82		Maximum analog output value is able to adjust to be 20mA or 10V. (Maximum value is 65536) Number key '1' : Move to left, '2' : Move to right, '3' : Increase value
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.

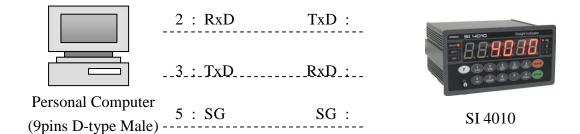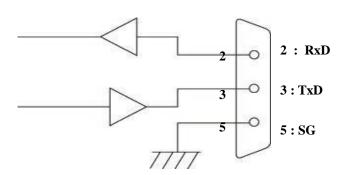|			DATA Transference Format selection(Under F62-00, F65-00 setting, only)
F67	●	0	Format 1.
		1	Format 2. (Format 1 + ID No.)
		2	CAS Format

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


```
2 : RxD          TxD :
-------------------------------
3 : TxD          RxD :
-------------------------------
5 : SG           SG :
-------------------------------
```

Personal Computer
(9pins D-type Male)

SI 4010

6-1-2 RS-232C Circuit


```
2    2 : RxD
3    3 : TxD
5    5 : SG
```

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

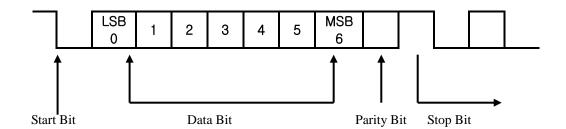⑥ Parity Bit : Non, Even, Odd (Selectable on "F-function 30") - **Refer "F30"**
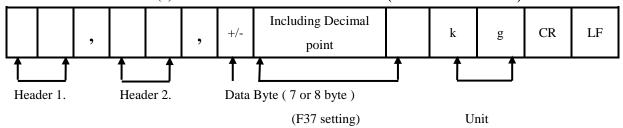
⑦ Code : ASCII

STX 02H

ETX 03H

CR 0DH

LF 0AH

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

| Start Bit | Data Bit | | | | | | Parity Bit | Stop Bit |

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

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

(F37 setting)　　　　　Unit

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

ST : Display weight "Steady"

US : Display "Un-Steady"

② Header 2. : NT : Net-Weight

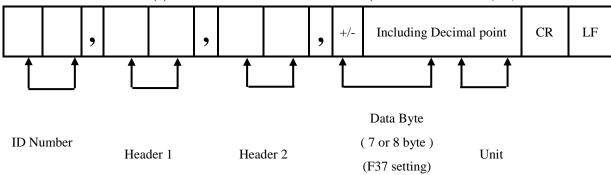GS : Net-Weight, under TARE

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)
(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.

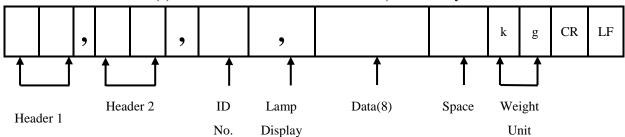③ Data Bit(Number) 2B(H) : "+" Plus

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

		,			,			,					k	g	CR	LF

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)

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
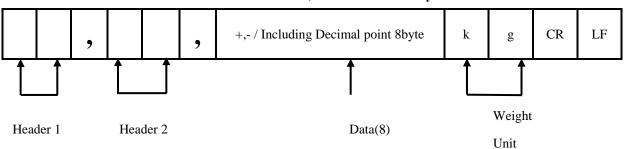
2E(H) : "." Decimal Point

⑤ Unit : kg, g, t

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

		,			,	+,- / Including Decimal point 8byte	k	g	CR	LF

Header 1   Header 2   Data(8)   Weight

Unit

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
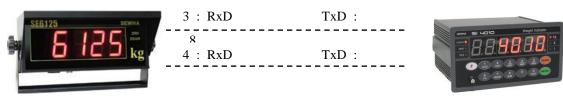
6-2. Current Loop Interface

"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).

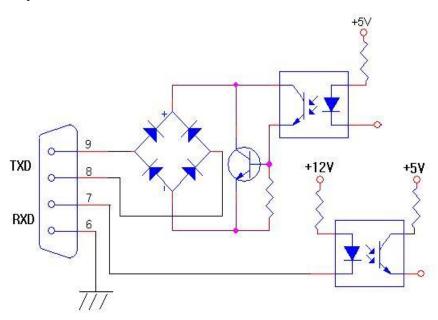※ **Current Loop Interface supports, up to 9,600 Communication Speed, only.**

6-2-1. Communication with Other Devices (Remote Display / External Display)


```
3 : RxD          TxD :
- - - - - - - - - - - - - - - - - - - - -
8
4 : RxD          TxD :
- - - - - - - - - - - - - - - - - - - - -
```

    Remote Display   SI 4010

    (External Display)

6-2-2. Current Loop Circuit

6-2-2. Data Format

As same as "RS-232C" Interface

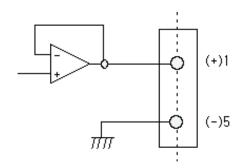## 6-3. Analog Output Interface (Option 02 : 0~10V   Output)

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.
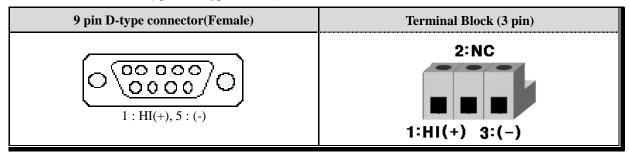
6-3-3. Output Adjustment

①. This output is adjusted as when the weight is "Zero", output is 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 : (-)	2:NC 1:HI(+) 3:(−)

※ 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

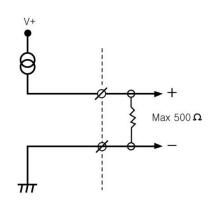①. Output Current : 4~20mA (Output Range : 2~22mA)

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 : (-)	 2:NC 1:HI(+) 3:(-)

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)

1		LSB 0	1	2	3	4	5	MSB 6			
0											

1.5V Electric Potential Difference

Start 1 Bit

Data Bit

Parity Bit

Stop 1 Bit

6-5-2. Data Format

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

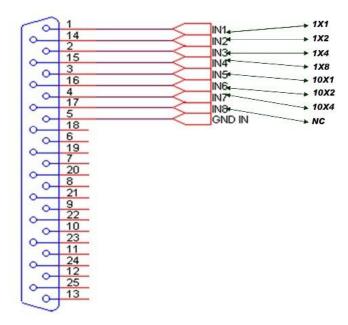### 6-5-3. RS-485 Circuit (In case of RS-485, only Use No6 and 7 pin)

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
TXD (−) 9 TXD (+) 8 RXD (−) 7 RXD (+) 6			1 2 3 4

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

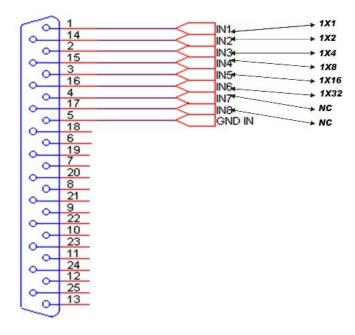## 6-6. BCD Input (Option 05) – Input for Part No. selection.

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.
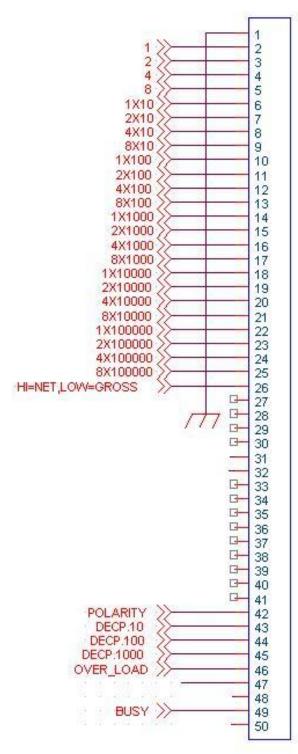
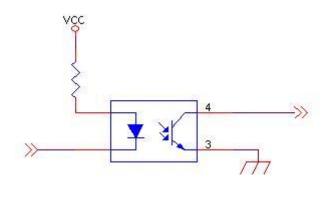**→Setting F57-00**

→Setting F57-01

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.

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

6-8. 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 "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.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 {Maxcapacity/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 **F** 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 **CLEAR** 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. #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 4010
	Serial No.	
	AUTHORIZED STAMP	