



Approved for Digital
Weigh Indicator

Digital Weighing Indicator SI 410

User Manual



Ver 2.0 2017.04.05



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1. BEFORE INSTALLATION

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.

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Inquiries

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2. INTRODUCTION

2-1. Introduction

Thank you for your choice of this SI 410 Industrial Digital Weighing Indicator.

This SI 410 model is high-performance weighing Indicator.

Please review and learn this instruction Manual and enjoy your process efficiency with "SI 410" Weighing Indicator.

2-2. Cautions



1. Don't drop on the ground and 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 previous notice or permission.
7. Item's performance will be up-dated continuously base on previous version's performance.

2-3. Features

1. SI 410 model is standard size indicator which is easy to install on the panel.
2. Front panel is covered with Polycarbonate film, strong against dust and water.
3. RS232 Serial interface is standard installed.
4. User can choose various options; Analog output 4~20mA, 0~10V / RS232C / RS422, RS485 / ETHERNET CARD / BCD OUT / BIN IN / SD Memory card

3. SPECIFICATION

3-1. Specification

Content		Specification	
Analog Part	Display Resolution	1/20,000	
	Internal Resolution	1/2,000,000 (±1,000,000)	
	Input Sensitivity	Min 0.1μV/V	
	Max Signal Input Voltage	Max 3.0mV/V	
	Load cell Excitation	DC +5V	
	A/D Conversion Method	Sigma-Delta	
	Decimal Point	0, 0.0, 0.00, 0.000	
	Drift	Offset	10PPM/°C
		Span	10PPM/°C
	Non Linearity		0.001% of Full Scale
Analogue Sampling(sec)		60times / sec(MAX)	
Environment	Operating Temperature Range	-10°C ~ +40°C [14°F ~ 104°F]	
	Operation Humidity Range	40% ~ 85% RH, Non-condensing	
Function	Calibration Mode	Test Weight Calibration Mode Simulation Calibration Mode	
	Display	6 digit, 25.4mm(1inch) Red FND for Numbers 7 digit, Red LED for Weight unit 8 digit, Green LED for State alarm 12 digit Green LED for Arrow	
	Key Pad	14pcs Standard Key pad	
	Additional Digital Input	6pcs external input key	
Communi- cation	Serial Port 1 (RS-232)	Data Transference Command Mode Serial Printer Mode Modbus (RTU)	
Relay Output	Relay Output	7pcs selectable relay output	
Power	AC : 110~240V, Maximum Power Consumption 19W		
Size	200mm(W) x 100mm(H) x 126.5mm(D)	Weight : 1250g	

3-2. Option

Option1	Serial Port (RS-422)
Option2	Serial Port (RS-485)
Option 3	Serial Port (RS-232)
Option 4	ETHERNET CARD
Option 5	Analog Output(0~20mA)
Option 6	Analog Output(0~10V)
Option 7	BCD OUT
Option 8	BIN IN
Option 9	SD Memory card

3-3. Front Panel






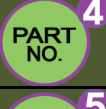
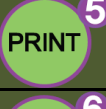



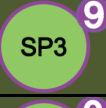



3-3-1. Front Panel (Display / Key Pad)

































3-3-2. State LED

LED	State
STEADY	When the weight is stable, ON.
ZERO	When the current weight is near zero, ON.
TARE	When the "TARE" function is set, ON.
HOLD	When the "HOLD" function is set, ON.
TxD	When indicator sends data out through serial communication.
RxD	When indicator receives data out through serial communication.
PRT	When the weighing data is printed, ON.
OUT1	When OUT1 (Relay) is operated, ON.
OUT2	When OUT2 (Relay) is operated, ON.
OUT3	When OUT3 (Relay) is operated, ON.
OUT4	When OUT4 (Relay) is operated, ON.
OUT5	When OUT5 (Relay) is operated, ON.
OUT6	When OUT6 (Relay) is operated, ON.
OUT7	When OUT7 (Relay) is operated, ON.
RUN	When the weighing process is going on.
HIGH	When display test is operated, ON
LOW	When display test is operated, ON
kg	Displayed weight unit under Function 103-00
g	Displayed weight unit under Function 103-01
t	Displayed weight unit under Function 103-02
%	Displayed weight unit under Function 103-03
pcs	Displayed weight unit under Function 103-04
oz	Displayed weight unit under Function 103-05
lb	Displayed weight unit under Function 103-06

3-3-3. Key Operation

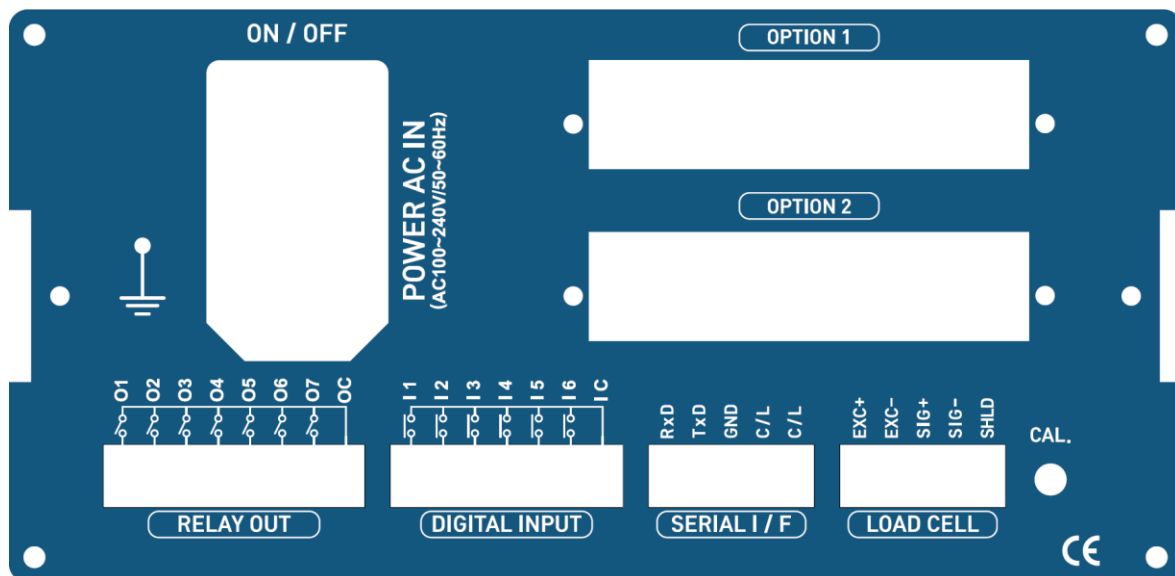
	<p>- Press 4 times within 3secs, to enter to Function setting mode.</p>
	<p>- Press 4 times within 3secs, to enter to "Hidden function" mode.</p>
	<p>- Make the weight value to Zero (It doesn't work under hold state or weight is near zero.) - Enter to function mode in SET-UP mode. - Number 1</p>
	<p>- Set the TARE Function 1st input : "TARE", 2nd input : "TARE Reset" (When "HOLD" or weight value is ZERO, then this key doesn't work.) - Number 2</p>
	<p>- Set the "HOLD" Function 1st input : "HOLD", 2nd input : "HOLD Reset" - Number 3</p>
	<p>- Product number setting - Number 4</p>
	<p>- Print out - Number 5</p>
	<p>- Make Run or stop weight mode - Number 6</p>
	<p>- SP1 set value setting - Number 7</p>
	<p>- SP2 set value setting - Number 8</p>
	<p>- SP3 set value setting - Number 9</p>
	<p>- SP4 set value setting - Number 0</p>
	<p>- Cancel or Move to previous step</p>
	<p>- Save and Move to next step</p>

3-3-4. Hot key

			Double tare setting (Once tare is set, Another tare is overlapped.)
			Print the Sub-total out
			Forced discharge
			Display the current weight during 5 secs.
			Display the Sub-total weight during 5 secs.
			Display the Grand-total weight during 5 secs.
			Print the Grand-total out
			Input Tare Value(when F530 is set as 01)
			Delete the Sub-total weight
			Delete the Grand-total weight

Tip Max accumulated weighing count : 999,999times
 Over 999,999times → return to "0" time
 Max accumulated weight display : 999999999 (g, kg, ton)
 Over 999,999,999 (g, kg, ton) → return to "0" (g, kg, ton)

3-4. Rear Panel



- (1) AC Power input terminal
- (2) External input terminal: User selectable 6EA (Function 156~161)
- (3) Serial Interface terminal

Terminal	RxD	TxD	GND	C/L	C/L
RS - 232	Rx	Tx	GND	C/L	C/L

- (4) Loadcell Input terminal

Terminal	EXC+	EXC-	SIG+	SIG-	SHLD
Loadcell	EXC+	EXC-	SIG+	SIG-	SHEILD

- (5) Relay output terminal: User selectable 7EA (Function 141~147, COM is common)

Terminal	O1	O2	O3	O4	O5	O6	O7	OC
Relay output	RELAY 1	RELAY 2	RELAY 3	RELAY 4	RELAY 5	RELAY 6	RELAY 7	RELAY COM

- (6) Analog output terminal

Terminal	-	+	Option
4~20mA	(-)	(+)	Option
0~10V	(-)	(+)	Option

- (7) Option serial interface terminal

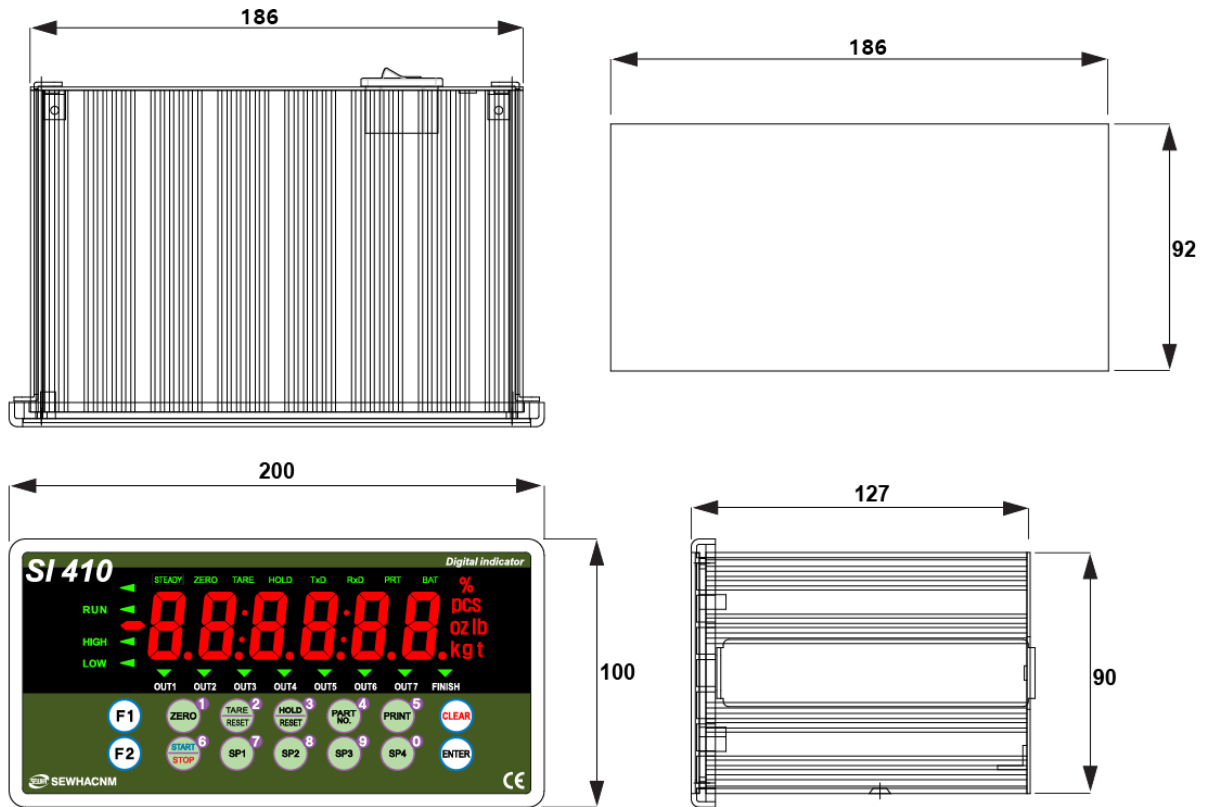
Terminal	1	2	3	4	Option
RS - 232C	GND	GND	Rx	Tx	Option
RS - 422	TxD-	TxD+	RxD-	RxD+	Option
RS - 485	Unused	Unused	D-	D+	Option



Please check the Comm. and other specification in the label, attached on the cover plate first, and make connection according to that information.

4. Installation

4-1. External Dimension & Cutting Size



4-2. Installation Components



SI 410



User Manual

4-3. Load cell Installation

Load Cell Wire Connection (In case of SEWHACNM's Load cell)

It depends on the manufacturer of load cell, please check the specification.



Under Set-up the Load cell, if EXC+ and EXC- have a short circuit, It may cause damage in the indicator.(specially analogue board)

If you connect other wires to Load cell terminal wrongly, it may cause damage in the analogue board.

Before connecting the load cell cable you have to power off and be sure to connect the cable to the terminal correctly.

Do not weld near the load cells , Indicators or other devices.

■ Load Cell Installation

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

5. Set-Up

5-1. Set-up mode
























5-1-1. How to enter Set-up mode








Press  key for 4 times


If "SET-UP" is displayed, it is complete to enter the set-up mode.

● How to enter each set mode

	SET-UP mode	Press  key for 4 times → 
Test mode	Analog value	Press  key for 4 times →  → 
	Analog Variation Value	Press  key for 4 times →  → 
	Key	Press  key for 4 times →  → 
	Display	Press  key for 4 times →  → 
	External Input	Press  key for 4 times →  → 
	Relay Output	Press  key for 4 times →  → 
	Analog out	Press  key for 4 times →  → 

SP set value	SP1	
	SP2	
	SP3	
	SP4	
Part Number		

*  key for saving data..

*  key for cancel and go back to previous step.

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

5-2-1. Calibration












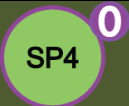


Calibration is the process of adjusting weight balance between "Real Weight" on the Load Cell and "Displayed weight of Indicator". When you replace Load Cell or Indicator, you have to do Calibration process once again.

(When you enter the weight calibration mode, tare, hole, print function become initialize.)

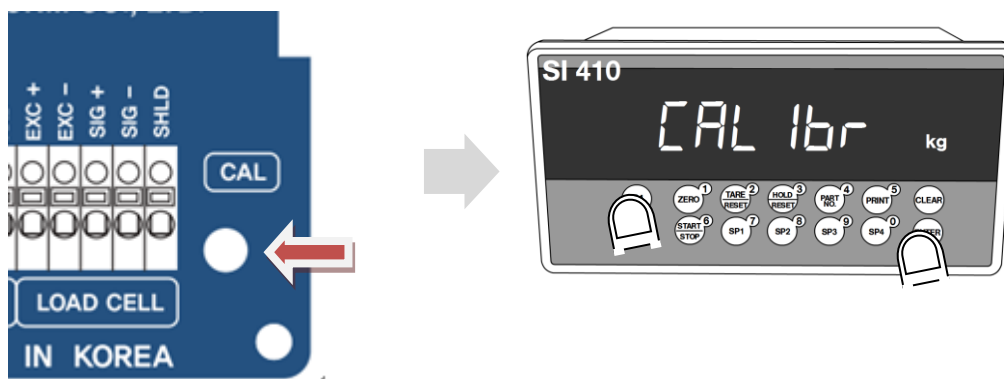


Before start to the calibration mode,

Please turn on the indicator and preheat about 15 min.

Calibration key function			
Key button	Function	Key button	Function
	Setting decimal point		Setting division value
	No. 1		No. 6
	No. 2		No. 7
	No. 3		No. 8
	No. 4		No. 9
	No. 5		No. 0
	Go back to previous step		Saving data

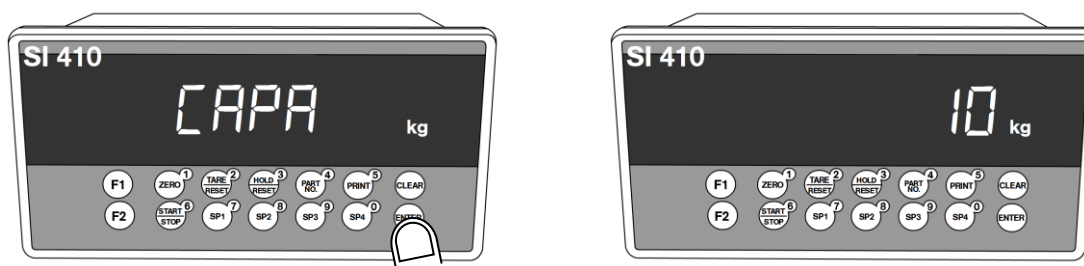
5-2-2. Start Test Weight Calibration Mode



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

When "CALIBR" displays, press **F1** key, select "WCAL" and press **ENTER** key.

5-2-3. Setting "Capacity of weighing Scale"

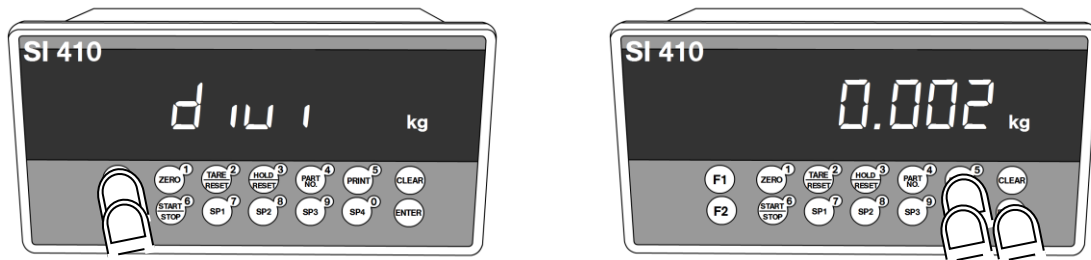


After displaying "CAPA", input max capacity with keys & Press **ENTER** key to save & move to next step.

Tip If you want to set Max capacity as 1,000kg and the division is 0.1 (100g), then just input "1000".

F1 key for going back to zero, **F2** key for gradual decrease from unit digit.

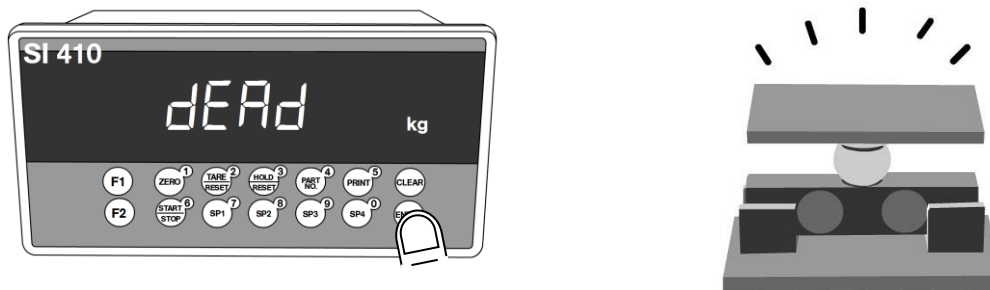
5-2-4. Decimal point and division setting



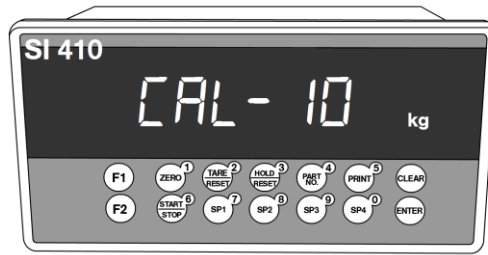
After "DIVI" is displayed, locate the decimal point with **F1** and **F2** keys, and set the division with **PRINT**⁵ and **SP4**⁰ keys. Press **ENTER** key to save.

Tip Max decimal point will be 0.001, and digit can be selected among 1, 2, 5, 10, 20, 50. Digit and decimal point must be fulfilled under the below condition.
(division value / Max capacity value) cannot be over 1/20,000. If this condition is not fulfilled, "err-1" will be displayed and move back to capacity setting mode.

5-2-5. Measuring the "DEAD" Weight of Weighing Scale



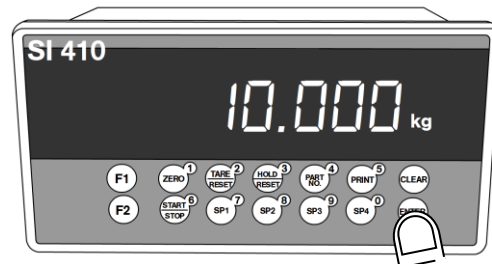
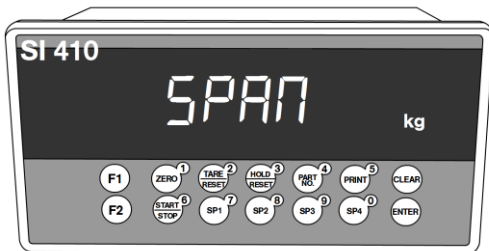
When "DEAD" displays, Press **ENTER** key, then indicator will calculate dead weight of scale part automatically (While this process, there should be nothing on the scale part.)




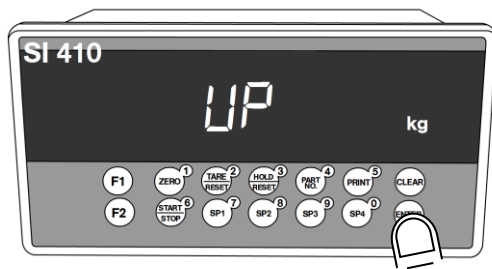
Indicator will search "DEAE weight" during 10secs automatically to find the best condition.


Tip In this step, if there is unstable condition such as some forces or Vibration on the scale part, "Error-A" will be displayed, and "DEAD value" will not be calculated. Please remove the cause of the force or vibration and process it again.

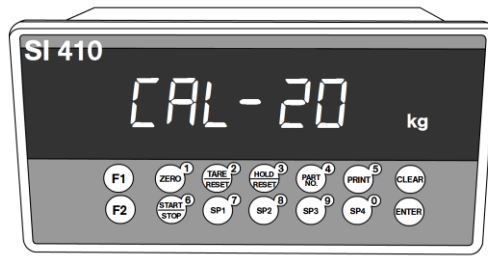
5-2-6. Calculating span value



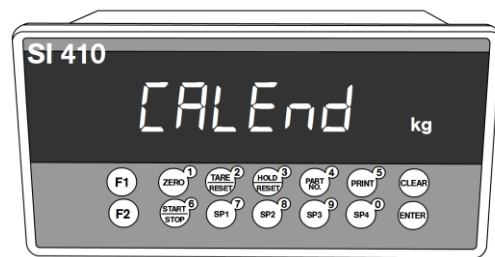
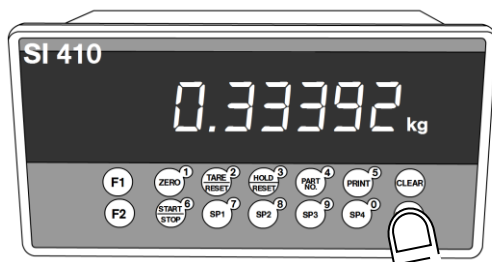
If the count is over, input the weight of your "Test Weight" and press  key.



If "UP" is displayed, please load "Test Weight" on the scale part and press  key.



Calculate Span value during 10~20 secs



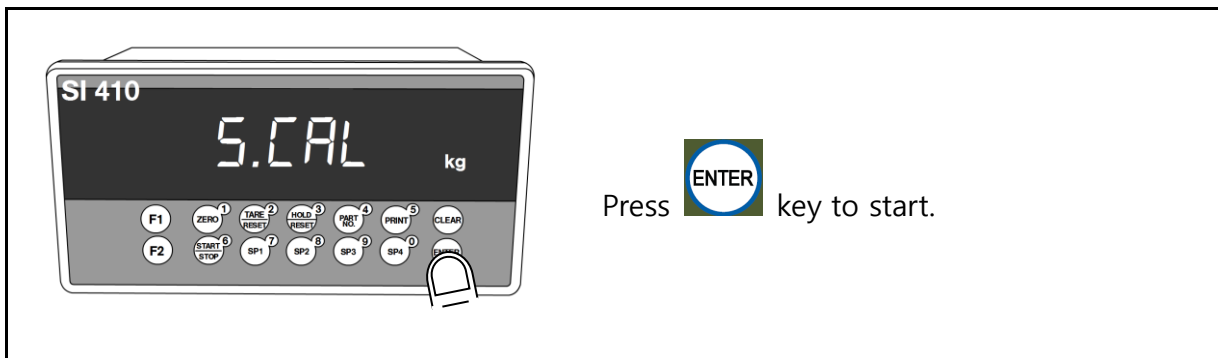
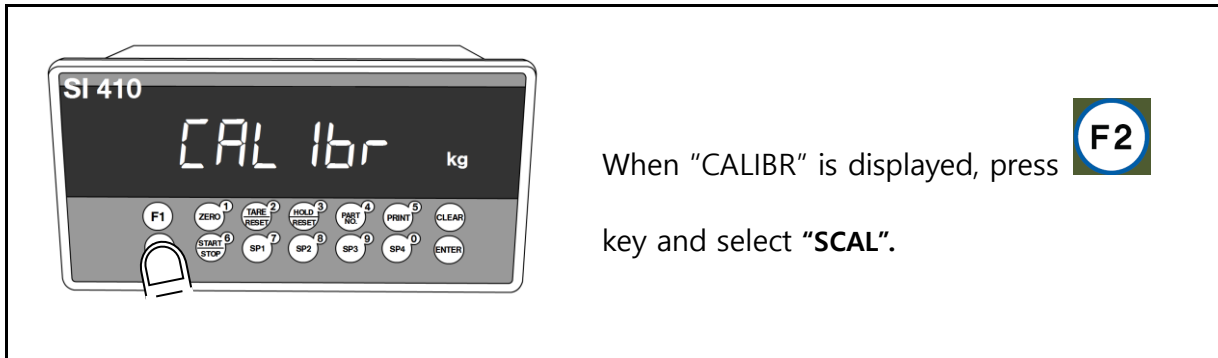
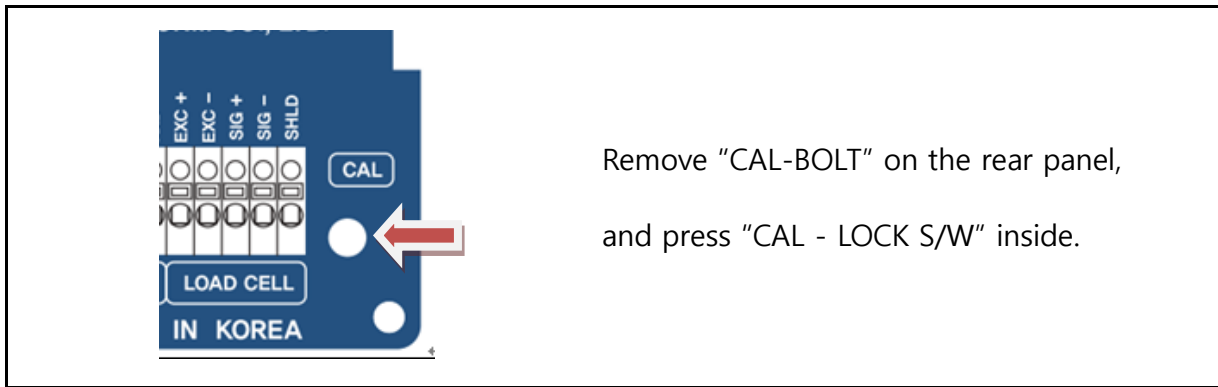
After calculation, span value will be displayed on the display. Then press  key.

When "CALEND" is displayed and calibration is completed.

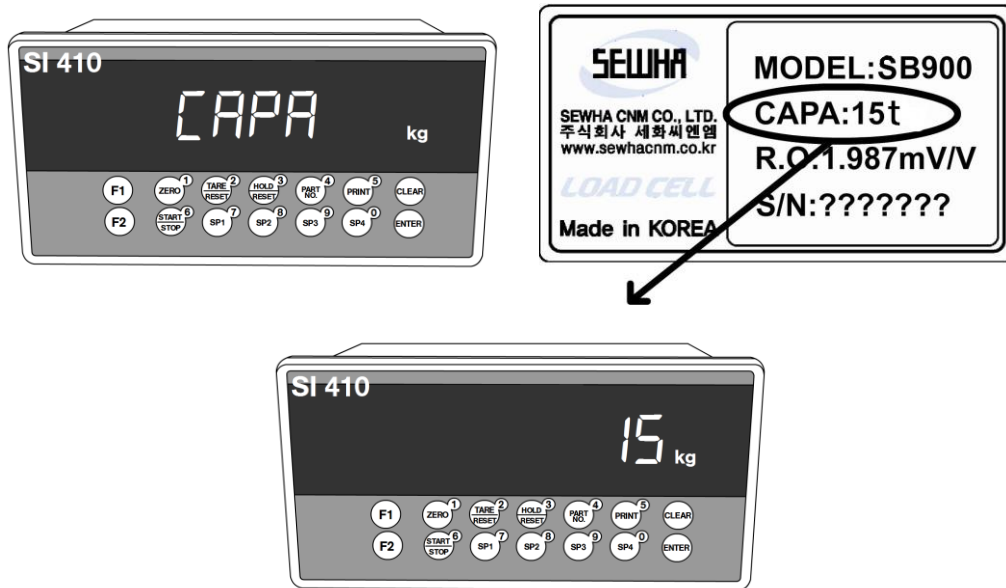
5-3. Simulation Calibration Mode (Calibrate without Test weight)

With this "Simulation Calibration Mode" you can make simple calibration without any "TEST weight". This calibration mode uses "Load cells' max capacity" and "Max Output Rate(mV)", so the weight adjustment degree might be less than "Test weight Calibration". The guaranteed resolution of this "Simulation Calibration" is 1/3,000. HF30 must be set with "01" to progress simulation calibration mode.

5-3-1. Simulation Calibration Mode Start



5-3-2. Setting "Capacity of Load Cell"

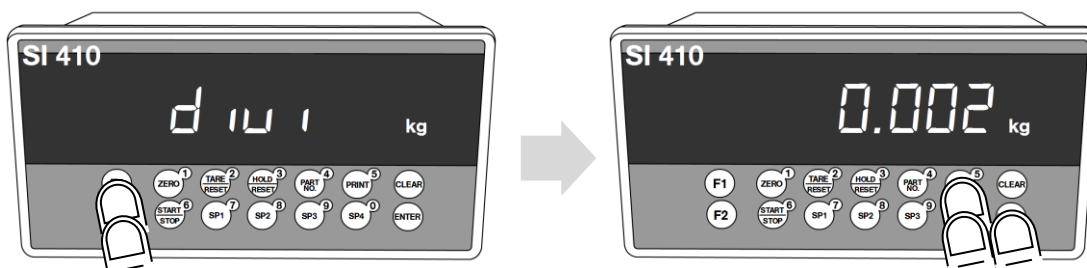







After "CAPA" displayed, Check Max Capacity of Load cell, Input the Max Capacity of Load cell. (refer the load cell label, or Test Report.) And press  key.

Tip In case of multiple pieces of load cells are installed, Please make sum of each load cell's capacity and make setting with Max Capacity.

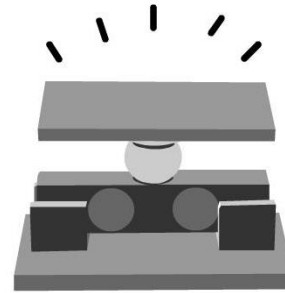
EX) There are 4pcs of load cells, and each load cell's Max capacity is 1,000kg.
Then, total Max Capacity will be 4,000kg(1,000 x 4) and you have to input 4,000.


5-3-3. Decimal point and division setting



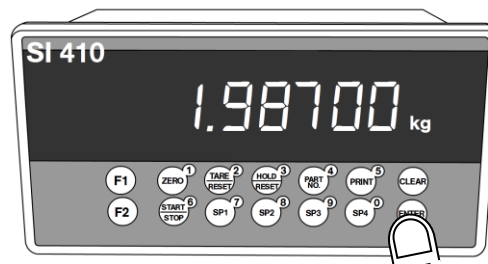
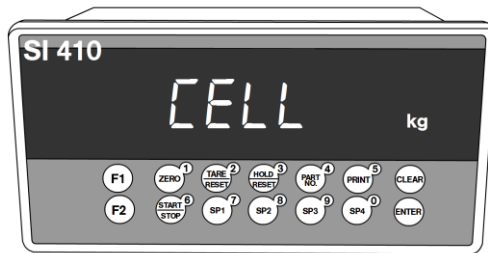
After "DIVI" is displayed, locate the decimal point with  and  keys, and set the division with  and  keys. Press  key to save.

5-3-4. Measuring the "DEAD" Weight of Weighing Scale




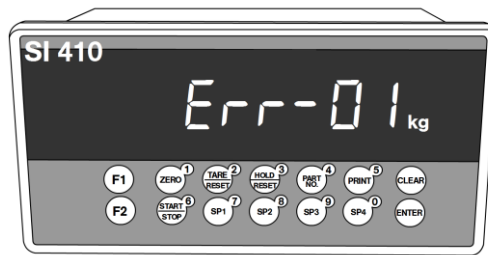
When "DEAD" displays, Press  key, then indicator will calculate dead weight of scale part automatically (While this process, there should be nothing on the scale part.)

5-3-5. Inputting Max Output (Rated Output Voltage / mV)

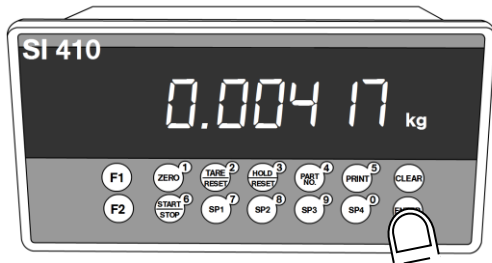



After "mV/V" is displayed, Check the Rated output value of Load cell.

(Refer to the load cell label, or Test Report). And Press  key to save and move to next step.



If input wrong value, there will display "Err-01", please go back to Setting "Capacity of Load Cell". After recheck the label of load cell and retry the process.

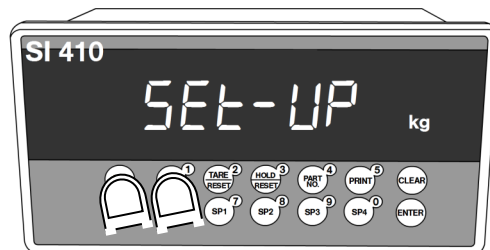


Calculated span value will be displayed. Then press  key to finish the calibration step.

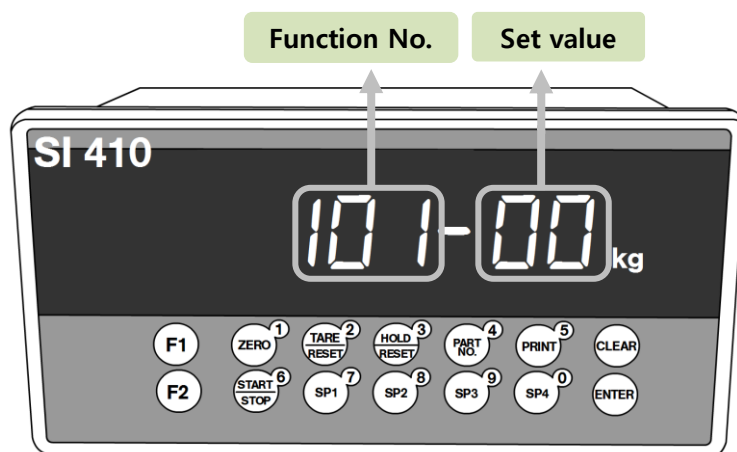
Tip In case of multiple pieces of load cells are connected, the rated output will be same as single Loadcell's. (Because plural load cells are connected with parallel connection, the sum of rated output voltage is same as single load cell's rated output)
 ※Due to some variation between "State output 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.

5-4. F-FUNCTION Setting

5-4-1. F-FUNCTION Setting



Press **F1** key 4 times → When "SETUP" is displayed, press **ZERO**¹ key.



(1) **F1** Function No. ↑ or input the function No. by number key (0~9). After select "Function No." area by pressing **F2** key.

(2) Input the Set value by number key (0~9) after select 'Set value' area by pressing **F2** key.

(3) **ENTER** key for saving data..

(4) **CLEAR** key for cancel and go back to previous step.

5-4-2. F-Function List

F-list	Subject	Def	Contents
100	Equipment No. setting (ID No.)	01	01~99
101	Weight-Back up Mode	01	00:Normal mode 01: Weight Back up Mode(Zero) 02: Weight Back up Mode(Zero&Tare)
102	Weighing Data Save Method	03	00: Manual: Whenever "Print" key input 01: Auto: At every steady states 02: Auto: At the first steady states 04: Manual&Auto: At every steady states 05:Manual&Auto: At the first steady states 06: Manual&Auto: After weighing is finished
103	Weight Unit	00	00 : kg 01 : g 02 : t 03 : % 04 : PCS 05 : OZ 06 : lb
104	Display Up-Date Speed	09	01:Slow(1time per 1sec) ~ 09:Fast(60times per 1sec)
105	Main display setting	00	00 : Current Weight 01 : Sub-total weight 02 : Grand-total
106	Under UNPASS/OVERLOAD state, Weight display	00	00 : Display 01 : No disply
107	Minus (-) Mark Display	00	00 : Use 01 : No display
108	Buzzer sound (External input detection)	00	00 : Buzzer sound 01 : No Buzzer sound
109	Key Input delay time	03	01 ~ 50 (Unit : 10msec)
110	External Input delay time	10	01 ~ 50 (Unit : 10msec)
111	Key lock	00	00 : Disuse 01 : Use
120	Language	00	00 : Korean 01 : English
121	Print Format Setting	00	00 : Continuous Print 01 : Continuous Print(Print "Tare", "Net weight") 02 : Single Print 03 : Single Print(Print "Tare", "Net weight")

122	Paper Withdraw Rate setting (After Continuous/Single Print)	00	00 ~ 09 (Unit : 1line add)	
123	Paper Withdraw Rate setting (After SUB/Grand-total Print)	00	00 ~ 09 (Unit : 1line add)	
124	Sub-total date delete after Sub- total printing	00	00 : No delete 01 : Delete	
125	Grand-total date delete after Grand-total printing	00	00 : No delete 01 : Delete	
130	Steady Range	08	01 ~ 99 (Unit:0.25gradation)	
131	Steady condition check time	10	01 ~ 99 (Unit:0.1sec.)	
132	Digital Filter	25	01:Weak vibration ~ 99:Strong vibration	
133	Auto Zero Range	00	00 ~ 99 (Unit:0.25gradation)	
134	Zero key operation mode	00	00:Always active 01:Active under steady condition only	
135	Zero key Operation Range	02	00: Active within 2% of Max Capacity 01: Active within 5% of Max Capacity 02: Active within 10% of Max Capacity 03: Active within 20% of Max Capacity 04: Active within 50% of Max Capacity 05: Active within 100% of Max Capacity 06:No limit	
140	Relay Output Auto / Manual Setting	00	00 : Auto 01 : Manual	
141	Relay Output 1 Setting	00	00 : Disuse	06 : Empty 07 : Run
142	Relay Output 2 Setting	00	01 : SP1	
143	Relay Output 3 Setting	00	02 : SP2	
144	Relay Output 4 Setting	00	03 : SP3	
145	Relay Output 5 Setting	00	04 : SP4	
146	Relay Output 6 Setting	00	05 : Finish	
147	Relay Output 7 Setting	00		
148	Relay Output Contact Setting	00	00 : Auto 01 : Manual	
149	Relay Output 1 Contact	00	00 : A Dry contact	
150	Relay Output 2 Contact	00	01 : B Dry contact	
151	Relay Output 3 Contact	00		
152	Relay Output 4 Contact	00		

153	Relay Output 5 Contact	00	00 : A Dry contact	
154	Relay Output 6 Contact	00	01 : B Dry contact	
155	Relay Output 7 Contact	00		
156	External Input 1 Setting	01	00 : Disuse	07 : Hold / Hold Reset
157	External Input 2 Setting	04	01 : Zero	08 : Run
158	External Input 3 Setting	07	02 : Tare	09 : Stop
159	External Input 4 Setting	11	03 : Tare Reset	10 : Run / Stop
159	External Input 4 Setting	11	04 : Tare / Tare Reset	11 : Print
160	External Input 5 Setting	13	05 : Hold	12: Sub-total Print
160	External Input 5 Setting	13	06 : Hold Reset	13 : Grand-total Print
161	External Input 6 Setting	14		14: Forced Finish

F-list	Subject	Def	Communication	
200	Port 1 Parity / Stop bit	00	00: Data bit8, Stop bit1, Parity bit Non 01: Data bit8, Stop bit1, Parity bit Odd 02: Data bit8, Stop bit1, Parity bit Even 03: Data bit7, Stop bit1, Parity bit Non 04: Data bit7, Stop bit, Parity bit Even	
201	Port 1 Communication Speed	02	00 : 2,400bps 01 : 4,800bps 02 : 9,600bps 03 : 14,400bps 04 : 19,200bps	05 : 28,800bps 06 : 38,400bps 07 : 57,600bps 08 : 76,800bps 09 : 115,200bps
202	Port 1 Communication mode	00	00: Simplex / Stream Mode 01: Duplex / Command Mode 02: Duplex / Command Mode (Compatible with S14100) 03: Print 04: Modbus(RTU)	
203	Port 1 Format under Stream Mode	00	00 : Format 1 (18byte) 01 : Format 2 (21byte) 02 : Format 3 (17byte) 03 : Format 4 (22byte) 04 : Format 5 (15byte)	

204	Port 1 transference under stream mode	00	00 : Countinuously 01 : Single time on every steady state 02 : Single time at the first steady point 03 : Single time output after weighing finish 04 : When input Print key	
205	Port 1 "Check-Sum" under command mode	00	00 : Disuse 01 : Use	
206	Port 1 Modbus communication data SWAP	00	00 : Basic 01 : Customizing	
210	Port 2 Parity / Stop bit	00	00: Data bit8, Stop bit1, Parity bit Non 01: Data bit8, Stop bit1, Parity bit Odd 02: Data bit8, Stop bit1, Parity bit Even 03: Data bit7, Stop bit1, Parity bit Non 04: Data bit7, Stop bit, Parity bit Even	
211	Port 2 Communication Speed	02	00 : 2,400bps 01 : 4,800bps 02 : 9,600bps 03 : 14,400bps 04 : 19,200bps	05 : 28,800bps 06 : 38,400bps 07 : 57,600bps 08 : 76,800bps 09 : 115,200bps
212	Port 2 Communication mode	01	00: Simplex / Stream Mode 01: Duplex / Command Mode 02: Duplex / Command Mode (Compatible with SI4100) 03: Print 04: Modbus(RTU)	
213	Port 2 Format under Stream Mode	00	00 : Format 1 (18byte) 01 : Format 2 (21byte) 02 : Format 3 (17byte) 03 : Format 4 (22byte) 04 : Format 5 (15byte)	
214	Port 2 transference under stream mode	00	00 : Countinuously 01 : Single time on every steady state 02 : Single time at the first steady point 03 : Single time output after weighing finish 04 : When input Print key	
215	Port 2 "Check-Sum" under command mode	00	00 : Disuse 01 : Use	

216	Port 2 Modbus communication data SWAP	00	00 : Basic 01 : Customizing
250	Ethernet Communication mode	00	00: Simplex / Stream Mode 01: Duplex / Command Mode 02: Duplex / Command Mode (Compatible with SI4100) 04: Modbus(RTU)
251	Ethernet Format under Stream Mode	00	00 : Format 1 (18byte) 01 : Format 2 (21byte) 02 : Format 3 (17byte) 03 : Format 4 (22byte) 04 : Format 5 (15byte)
252	Ethernet transference under stream mode	00	00 : Countinuously 01 : Single time on every steady state 02 : Single time at the first steady point 03 : Single time output after weighing finish 04 : When input Print key
253	Ethernet "Check-Sum" under command mode	00	00 : Disuse 01 : Use
254	Ethernet Modbus LCB/MSB setting	00	00 : Disuse 01 : Use

Remark: If BCD-OUT option is needed, F250 must set as 00

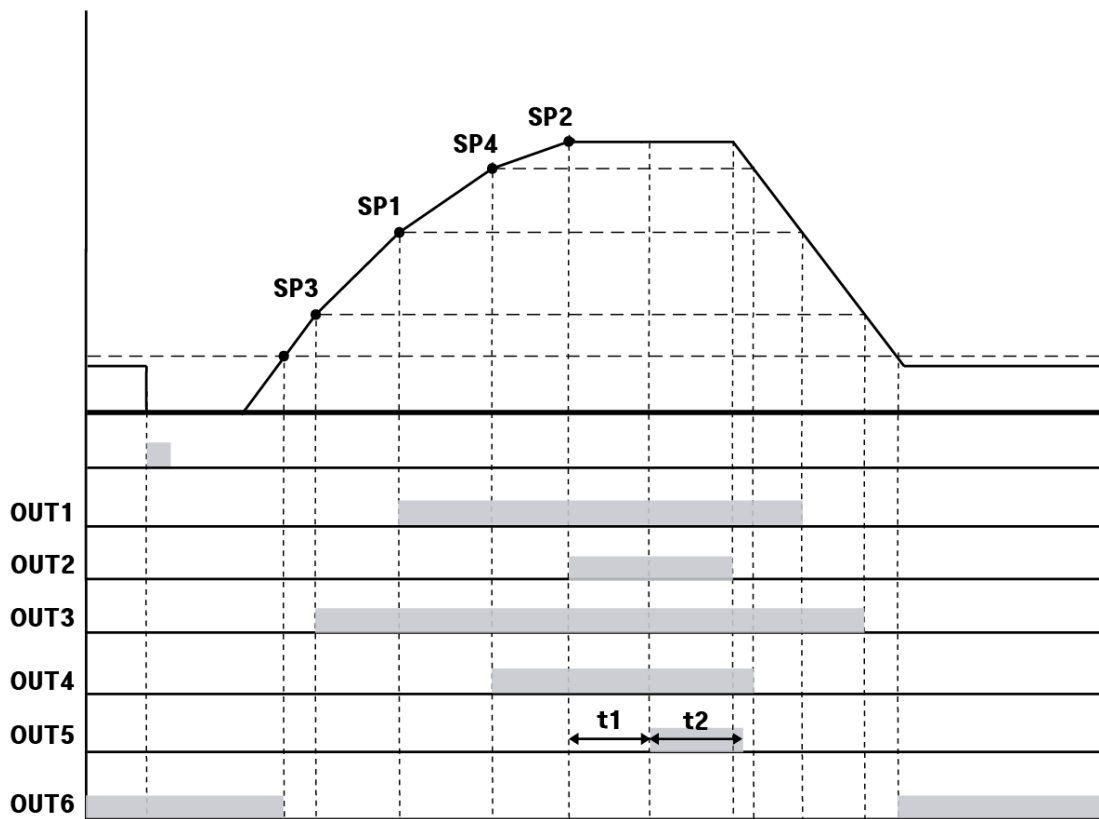
F-list	Subject	Def	Option
300	Analog Output Direction	00	00 : Forward 01 : Reverse
301	Analog Output Applying Weight Range	00	00 : Absolute number(-&+) 01 : Positive number(only +)
302	Analog Output Standard	02	00 : Within 10% of Max Capacity 01 : Within 20% of Max Capacity 02 : Within 50% of Max Capacity 03 : Within 100% of Max Capacity
310	BCD IN Enter method (Part Number)	00	00 : Disuse 01 : Enter the Unit digit, and Tenth digit with dividing 02 : Enter the Unit digit, and Tenth digit without dividing 03 : Absolute value

330	SD Memory Card	00	00 : Disuse 01 : Use
331	Automatic Save Data in SD Memory Card	00	00 : Disuse 01 : Use

F-list	Subject	Def	Control Setting
500	Weighing Mode	01	00: Disuse 01: Limit Mode1 02: Limit Mode2 03: Checker Mode1 04: Checker Mode2 05: Random Packer Mode 06: Accumulate Mode1 07: Accumulate Mode 2
501	Relay Control Type	00	00 : Minus&Plus weight Control 01 : Plus weight Control
502	Empty Relay Output	00	00 : Empty range 01 : Zero
510	Finish Relay Output Delay Time	10	00~99 (Unit: : 0.1sec) 00 : Finish Relay Output under steady state 20 : Finish Relay output after 2.0 seconds
520	Finish Relay Output Time	10	00~99 (Unit: : 0.1sec) 01 : Finish Relay Output for 0.1 Second 20 : Finish Relay Output for 2.0 Second
530	Tare operation condition	00	00: Tare key 01: Input Tare weight
531	Tare Key operation mode	00	00 : Always active 01 : Active under steady condition only
532	Tare key Operation Range	02	00: Active within 10% of Max Capacity 01: Active within 20% of Max Capacity 02: Active within 50% of Max Capacity 03: Active within 100% of Max Capacity
533	Tare Delay Time	00	00 : Disuse 01 ~ 10 : Use (Unit : 1 sec)
534	Auto Zero function under Tare state	00	00 : Disuse 01 : Use
535	Near zero output Setting Under tare ON state	00	00 : Zero Output 01 : Actual zero output except Tare weight

536	Auto tare set when weighing starts	00	00: Disuse 01: Use
537	Tare reset Timing	00	00 : Manual 01 : Auto at empty range 02 : Auto at steady condition 03 : Auto when finish relay out is off
538	Auto Tare reset Time	00	00 : Disuse 00 ~ 09 : use (Unit : 1sec)
540	Hold Mode	00	00: Sample Hold 01: Peak Hold 02: Average Hold
541	Auto Hold set	00	00 : Disuse 01 : Use (Activate when weight is over near zero range with stable)
542	Hold Delay Time	00	00 : Disuse 01 ~ 10 : Use (Unit : 1sec)
543	Hold reset at the near zero	00	00: Disuse 01: Use
544	Hold reset delay time	00	00 : Disuse 01 ~ 10 : Use (Unit : 1sec)
545	Average Hold Time	10	01~99(Unit: 01sec) Hold average weight during set time
550	Set point save	00	00 : Apply to current P/N 01 : Apply to every P/N
551	Drib Control	00	00: Disuse 01: Use

◆ Weighing mode 1. – Limit mode (A Dry contact) -User's choice relay output 2
 (Function 500-01)- relay output order is selectable by user



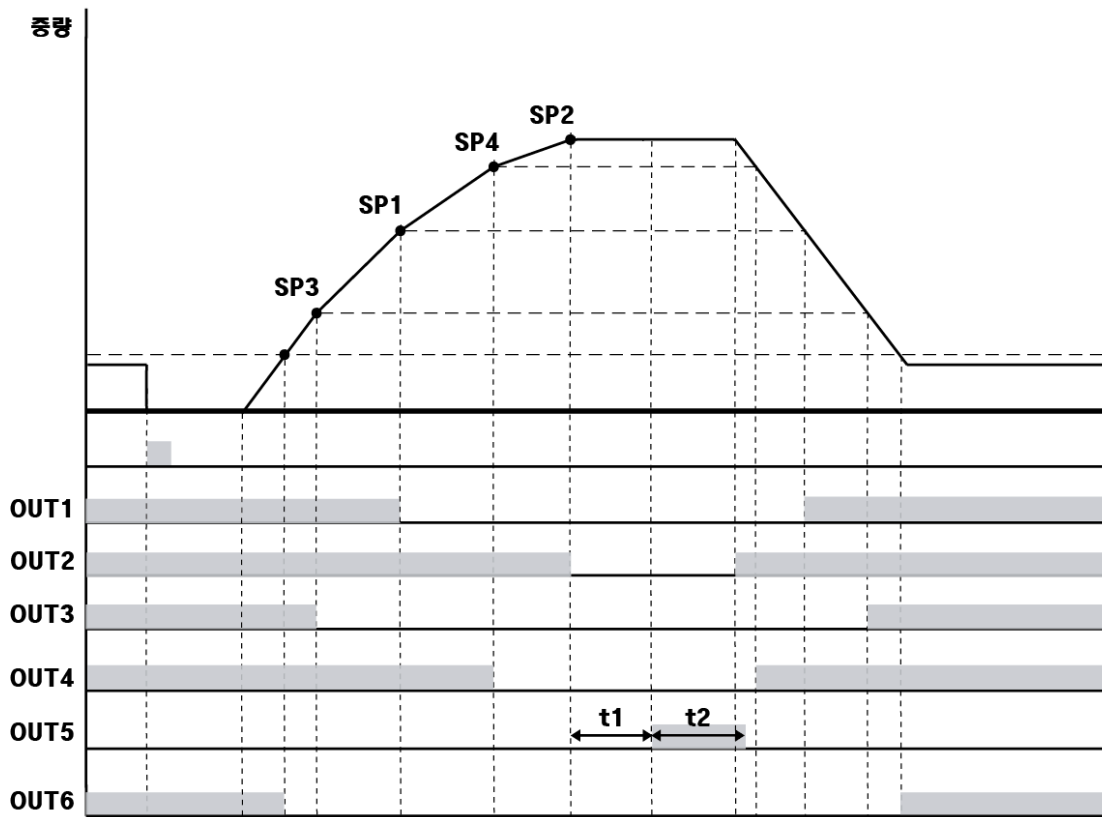
Time

Time	Contents
t1	Finish Relay Output Delay Time (Function 510) When Function 102-3 or 102-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 520)

Relay output

Relay	Condition	Relay	Condition
OUT 1	Current weight \geq SP1 (ON) Current weight $<$ SP1 (OFF)	OUT 4	Current weight \geq SP4 (ON) Current weight $<$ SP4 (OFF)
OUT 2	Current weight \geq SP2 (ON) Current weight $<$ SP2 (OFF)	OUT 5	After SP2 After t1 set time During t2 set time (ON)
OUT 3	Current weight \geq SP3 (ON) Current weight $<$ SP3 (OFF)	OUT 6	Within near zero range (Function HF29) (ON)

◆ Weighing mode 2. – Limit mode (B Dry contact) - User's choice relay output 2
 (Function 500-02) - relay output order is selectable by user



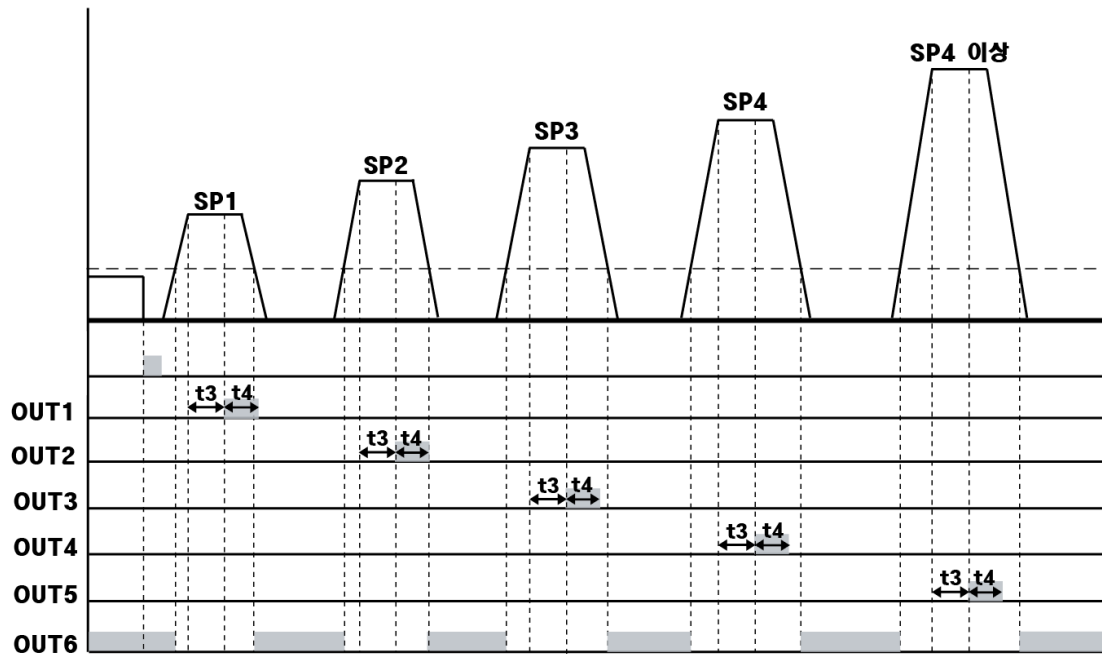
Time

Time	Contents
t1	Finish Relay Output Delay Time (Function 510) When Function 102-3 or 102-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 520)

Relay output

Relay	Condition	Relay	Condition
OUT 1	Current weight < SP1 (ON) Current weight ≥ SP1 (OFF)	OUT 4	Current weight < SP4 (ON) Current weight ≥ SP4 (OFF)
OUT 2	Current weight < SP2 (ON) Current weight ≥ SP2 (OFF)	OUT 5	After SP2 After t1 set time During t2 set time (ON)
OUT 3	Current weight < SP3 (ON) Current weight ≥ SP3 (OFF)	OUT 6	Within near zero range (Function HF29) (ON)

◆ Weighing mode 3. - Checker mode 1. (500-03) – Simple comparison mode 1.



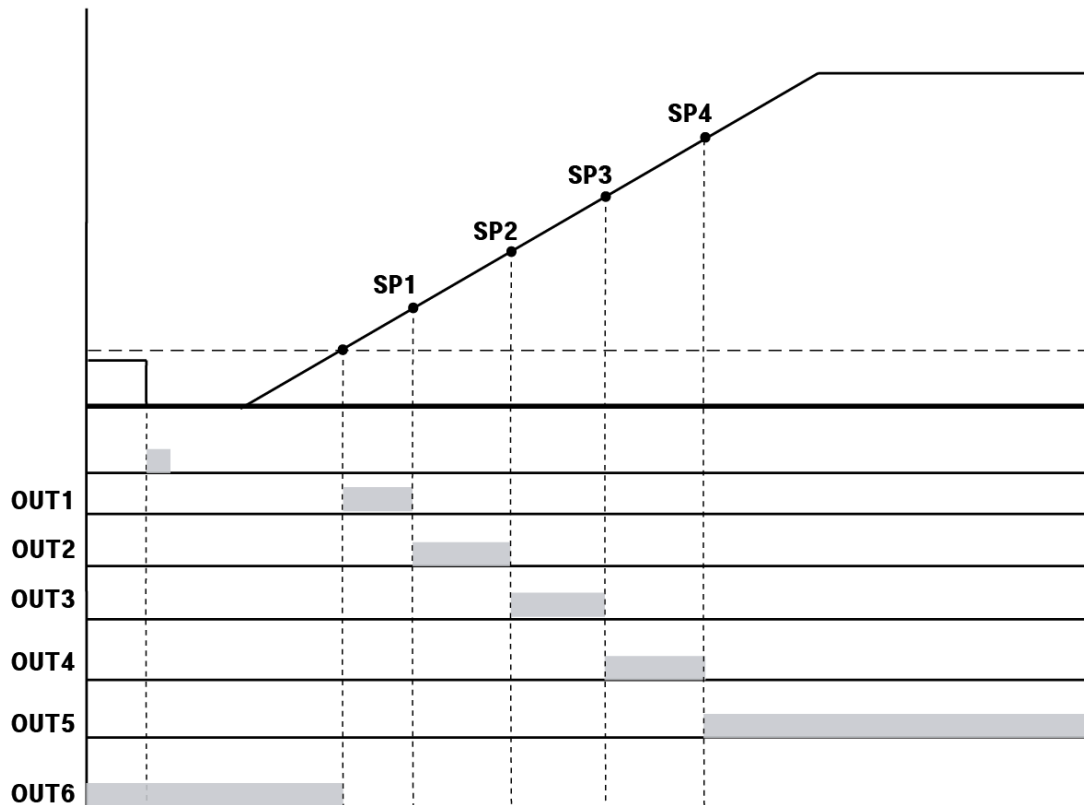
Time

Time	Contents
t1	Finish Relay Output Delay Time (Function 510) When Function 102-3 or 102-6, save the date after t3 time.
t2	Finish Relay Output Time (Function 520)

Relay output

Relay	Condition	Relay	Condition
OUT 1	Near zero < Steady weight ≤ SP1 (ON)	OUT 4	SP3 < Steady weight ≤ SP4 (ON)
OUT 2	SP1 < Steady weight ≤ SP2 (ON)	OUT 5	SP4 < Steady weight (ON)
OUT 3	SP2 < Steady weight ≤ SP3 (ON)	OUT 6	Within near zero range (Function HF29) (ON)

◆Weighing mode 4. - Checker mode 2. (500-04) - Simple comparison mode 2.

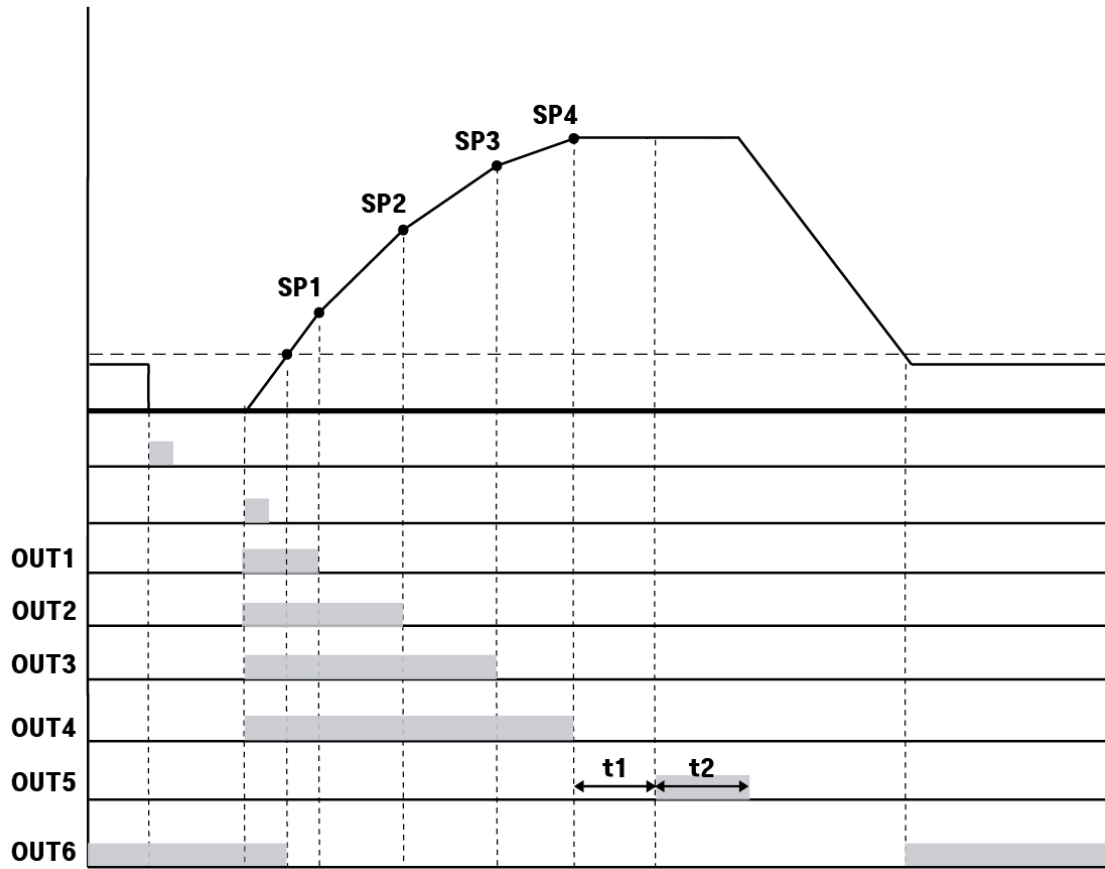


Relay output

Relay	Condition	Relay	Condition
OUT 1	Near zero < Current weight ≤ SP1 (ON)	OUT 5	SP4 < Current weight (ON)
OUT 2	SP1 < Current weight ≤ SP2 (ON)	OUT 6	Within near zero range (Function HF29) (ON)
OUT 3	SP2 < Current weight ≤ SP3 (ON)		
OUT 4	SP3 < Current weight ≤ SP4 (ON)	OUT 7	Cell-Error (ON)

※No Accumulation

◆Weighing mode 5. – Random Packer mode (500-05)



Time

Time	Contents
t1	Finish Relay Output Delay Time (Function 510) When Function 102-3 or 102-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 520)

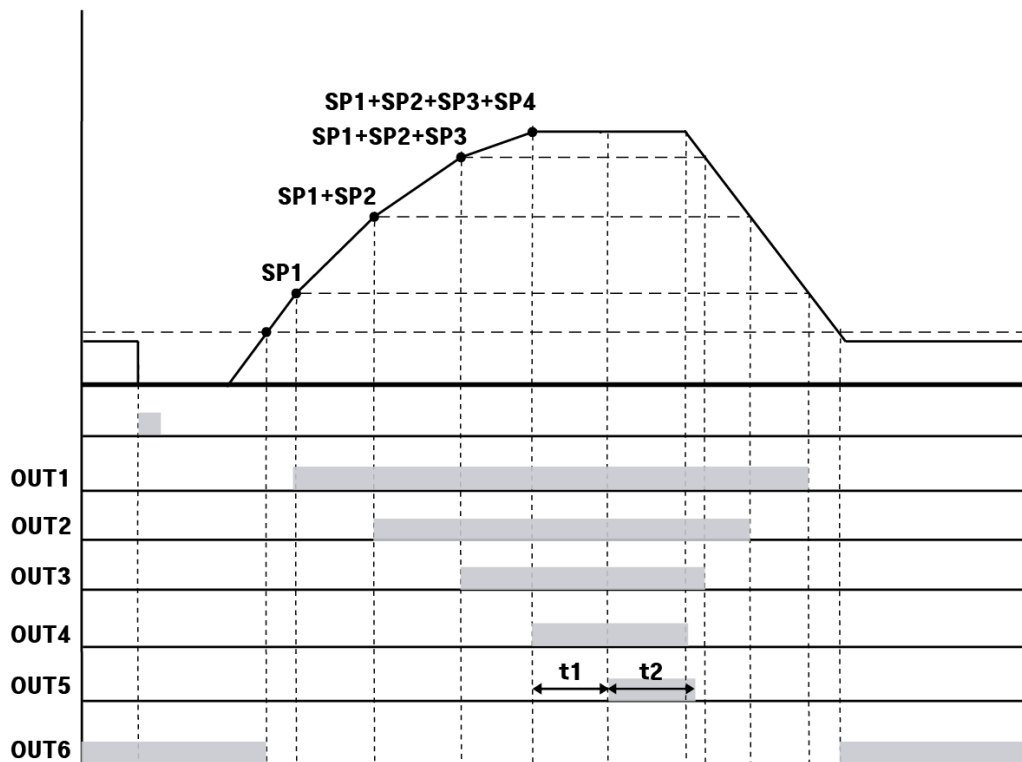
Relay output

Relay	Condition	Relay	Condition
OUT 1	Start On (ON) Current weight \geq SP1 (OFF)	OUT 4	Start On (ON) Current weight \geq SP4 (OFF)
OUT 2	Start On (ON) Current weight (OFF)	OUT 5	After SP4 After t1 set time During t2 set time (ON)
OUT 3	Start On (ON) Current weight \geq SP3 (OFF)	OUT 6	Within near zero range (Function HF29) (ON)

※Drib control : After weighing is finished, if the weight is changed during t1, it will adjust weighing finished weight by controlling drip gate. (Function 250-01)

◆ Weighing mode 6. – Accumulation mode 1. (500-06)

-Each set point need to be the difference between each steps.



Time

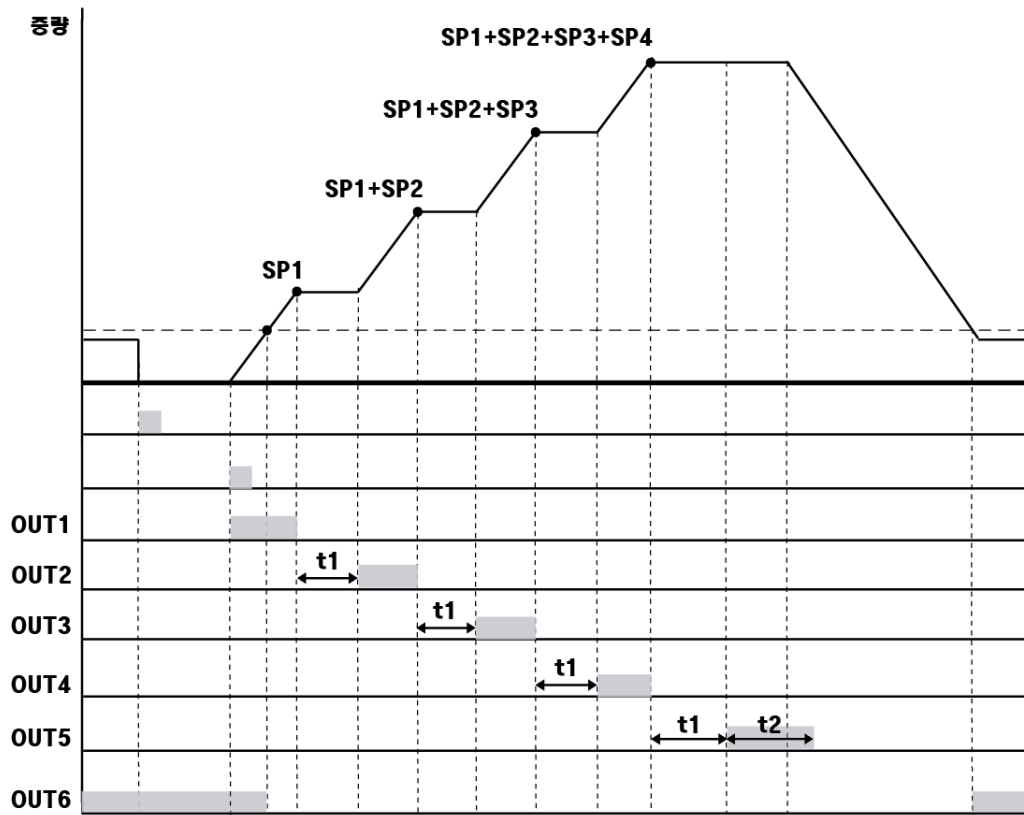
Time	Contents
t1	Finish Relay Output Delay Time (Function 510) When Function 102-3 or 102-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 520)

Relay output

Relay	Condition	Relay	Condition
OUT 1	Current weight \geq SP1 (ON) Current weight $<$ SP1 (OFF)	OUT 4	Current weight \geq SP1+SP2+SP3+SP4 (ON) Current weight $<$ SP1+SP2+SP3+SP4 (OFF)
OUT 2	Current weight \geq SP1+SP2 (ON) Current weight $<$ SP1+SP2 (OFF)	OUT 5	After SP1+SP2+SP3+SP4 After t1 set time During t2 set time (ON)
OUT 3	Current weight \geq SP1+SP2+SP3 (ON) Current weight $<$ SP1+SP2+ SP3 (OFF)	OUT 6	Within near zero range (Function HF29) (ON)

◆ Weighing mode 7. - Accumulation mode 2. (500-07)

- Each set point need to be the difference between each steps.



Time

Time	Contents
t1	Finish Relay Output Delay Time (Function 510) When Function 102-3 or 102-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 520)

Relay output



Relay	Condition	Relay	Condition
OUT 1	Start On (ON) Current weight \geq SP1 (OFF)	OUT 4	$SP1+SP2+SP3 \leq$ Current weight $< SP1+SP2+SP3+SP4$ (ON)
OUT 2	$SP1 \leq$ Current weight $< SP1+SP2$ (ON)	OUT 5	After Current weight $\geq SP1+SP2+SP3+SP4$ After t1 set time During t2 set time (ON)
OUT 3	$SP1+SP2 \leq$ Current weight $< SP1+SP2+SP3$ (ON)	OUT 6	Within near zero range (Function HF29) (ON)


5-4-3. Hidden Function

* How to enter Hidden function setting mode: Press  Key during 4 times and input

your password. Default password is 1111. Press  key after input your password.

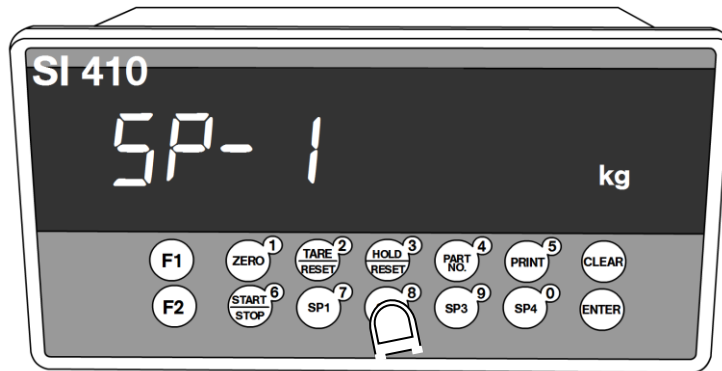
*  – Move Hidden function number /  – Save data

Serial Number Check	
HF01	Check your device's serial number
S/W Version Check	
HF02	Check the currently applied program version
H/W Version Check	
HF03	Check the currently applied hardware version
DATE(Y,M,D) Check / Modification	
HF04	Check the date or adjust when it is wrong.
TIME(H,M,S) Check / Modification (24Hours)	
HF05	Check the time or adjust when it is wrong.
Password Setting (4digit)	
HF06	<p>Password is required when you enter to hidden function. Enter the password twice.</p>  <p>1 2 3 4 5 6 7 8 9 0</p> <p>Password combination within 0~9.</p>
Maximum Capacity Weight Check	
HF07	Check the max capacity which is set under calibration mode.
Weight Span Value Check	
HF08	Check the Weight Span Value Check
Analog Output Use Setting	
HF09	<input checked="" type="radio"/> 00 4-20mA Output
	<input type="radio"/> 01 0-10V Output
Minimum Analog Output Setting	
HF10	<p>Minimum Analog Output (Analog out 4~20mA / 0~10V). The 4-20Ma's begin number is "0", so after enter the Function mode and write the "4" to show "4mA"</p> <p> key press (–) Setting. Input range : -20 ~ +20 , basic value : 0</p>

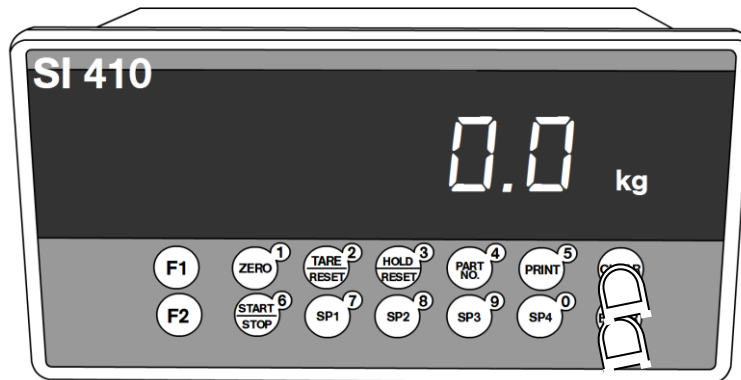
Maximum Analog Output Setting	
HF11	<p>Maximum Analog Output (Analog out 4~20mA / 0~10V). The 4-20Ma's begin number is "0", so after enter the Function mode and write the "-4" to show "20mA"</p> <p> key press (-) Setting. Input range : -20 ~ +20 , basic value : 0</p>
Input 0mV of the Simulating Calibration input value	
HF12	When input simulating calibration value, it is able to set 0mV.
Input 2mV of the Simulating Calibration input value	
HF13	When input simulating calibration value, it is able to set 2mV.
Function List Factory Reset	
HF14	Change to default F-Setting
Factory Reset	
HF15	Change to default all of Setting
Ip Address Check / Modification	
HF16	Check or adjust the IP Address
Ip Address Check / Modification	
HF17	Check or adjust the IP Address
Ip Address Check / Modification	
HF18	Check or adjust the IP Address
Ip Address Check / Modification	
HF19	Check or adjust the IP Address
GateWay Check / Modification	
HF20	Check or adjust the GateWay
GateWay Check / Modification	
HF21	Check or adjust the GateWay
GateWay Check / Modification	
HF22	Check or adjust the GateWay
GateWay Check / Modification	
HF23	Check or adjust the GateWay
SubNet Mask Check / Modification	
HF24	Check or adjust the SubNet Mask
SubNet Mask Check / Modification	
HF25	Check or adjust the SubNet Mask
SubNet Mask Check / Modification	
HF26	Check or adjust the SubNet Mask




SubNet Mask Check / Modification			
HF27	Check or adjust the SubNet Mask		
ETHERNET Port Number Check / Modification			
HF28	Check or adjust the ETHERNET Port Number		
Near Zero value Check / Modification			
HF29	Check or adjust the near zero value		
Simulation calibration Setting			
HF30	●	00	Disuse
		01	Use
Server Ip Address Check and modification			
HF31	Server Ip Address can Check and modification.		
Server Ip Address Check and modification			
HF32	Server Ip Address can check and modification		
Server Ip Address Check and modification			
HF33	Server Ip Address can check and modification		
Server Ip Address Check and modification			
HF34	Server Ip Address can check and modification		
Ethernet Card Mode			
HF35	●	0	Server Mode Simplex(F250-00): Data transfer to unspecified IP as one way Duplex(F250-01): Data transfer to asked IP
		1	Client Mode Data transfer to IP as set HF31~34 with port as set HF28

5-5. Set Point value input (SP1~SP4)



Press , , , or  key to enter SP1, SP2, SP3, or SP4 set mode.

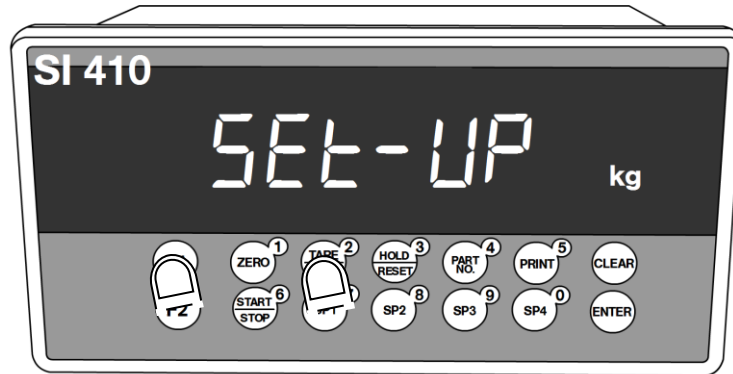





- When 0.0kg is displayed, set SP value by pressing numeric key.
- When inputting SP value is finished, press  key to save the data.
-  key for saving data.
-  key for cancel and go back to previous step
- SP value is not able to be set over Max Capacity value.
- Default SP1 value is "0"








5-6. Test Mode



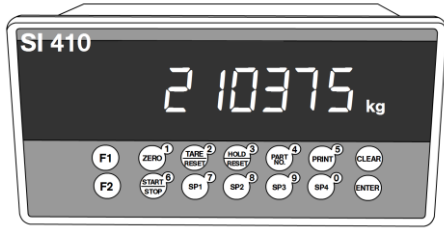
Before starting the TEST mode, please remove other connected devices.



- Press  key for 4times to enter SET-UP mode
- Press  key in the SET-UP mode
-  key for cancel and go back to previous step

Key button	Test Mode	Key button	Test Mode
	Analog Value		Relay Output
	Analog Variation Value		Analog out
	Key		
	Display		
	External Input		

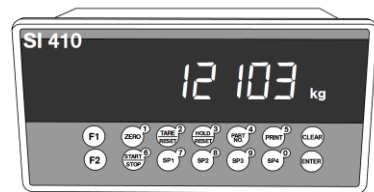
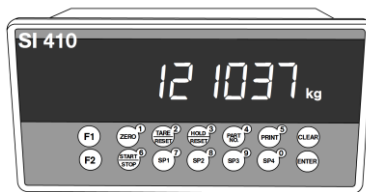
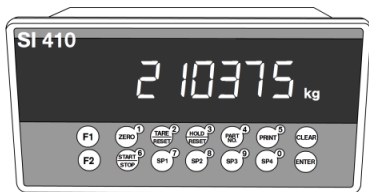
5-6-1. Analog value Chcek



Display the analog value as digitalized. Variable of unit place is not abnormal.

(Display from -1,048,575 to 1,048,575)

If there is big variation of analog value or no change although adding load, it is doubted Load cell problem or analog part problem in indicator.

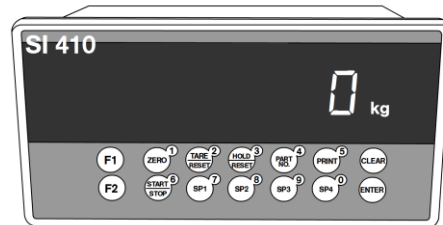
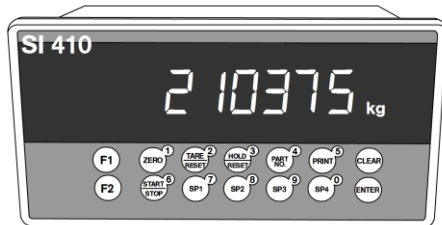


1 ZERO Display from Hundred thousand's place.

2 TARE RESET Display from Million's place.

2 TARE RESET Display from Ten Million's place.

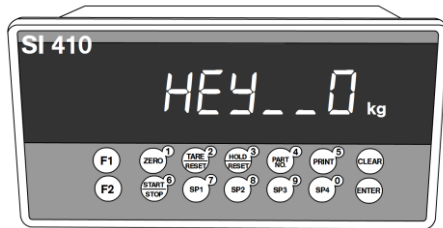
5-6-2. Analog Deviation Check Mode



Display the analog value as digitalized, then make zero to check Analog Deviation.

Making zero is by pressing **2** TARE RESET key..

5-6-3. Key check mode



Show on the screen the pressing each Key.

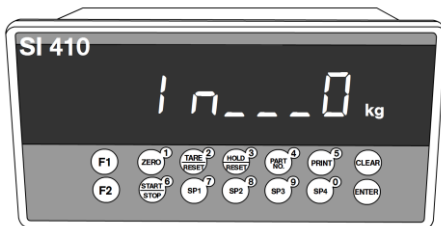
Key button	Display	Key button	Display
ZERO 1	1	SP2 8	8
TARE RESET 2	2	SP3 9	9
HOLD RESET 3	3	SP4 0	0
PART NO. 4	4	ENTER	10
PRINT 5	5	F1	11
START STOP 6	6	F2	12
SP1 7	7		

5-6-4 Display check mode



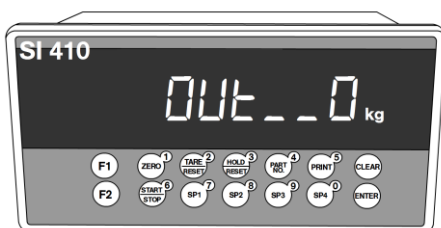
- (1) Test FND
- (2) Turn on the FND by 1 segment gradually.
- (3) After Turn on all of segment, turn off all of segment. Then repeat step (2) and (3).

5-6-5 External Input Check Mode



Show which External input is working.

5-6-6 Relay Output Check Mode

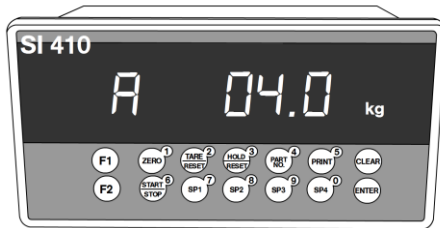


It is able to check Output relay working by pressing Numeric Key.

(Don't connect any device with relay output terminal.)

OUT1	OUT2	OUT3	OUT4	OUT5	OUT6	OUT7
ON/OFF	ON/OFF	ON/OFF	ON/OFF	ON/OFF	ON/OFF	ON/OFF

5-6-7 Analog Output (4~20mA, 0~10V) Check Mode



Analog output simulation : 0(4mV,0V)~20(20mV,10V)

If the range is 4~20mA, A will be displayed.

If the range is 0~10V, V will be displayed.

Use numeric and enter key to check the output value with unit 0.1.

If entered value is over maximum value, actual output will be 100% of that range.

EX) When analog output mode is 4~20mA, 4mA will be out if you enter 4.0

When analog output mode is 4~20mA, 20mA will be out if you enter 20.0

When analog output mode is 0~10V, 4.7V will be out if you enter 4.7

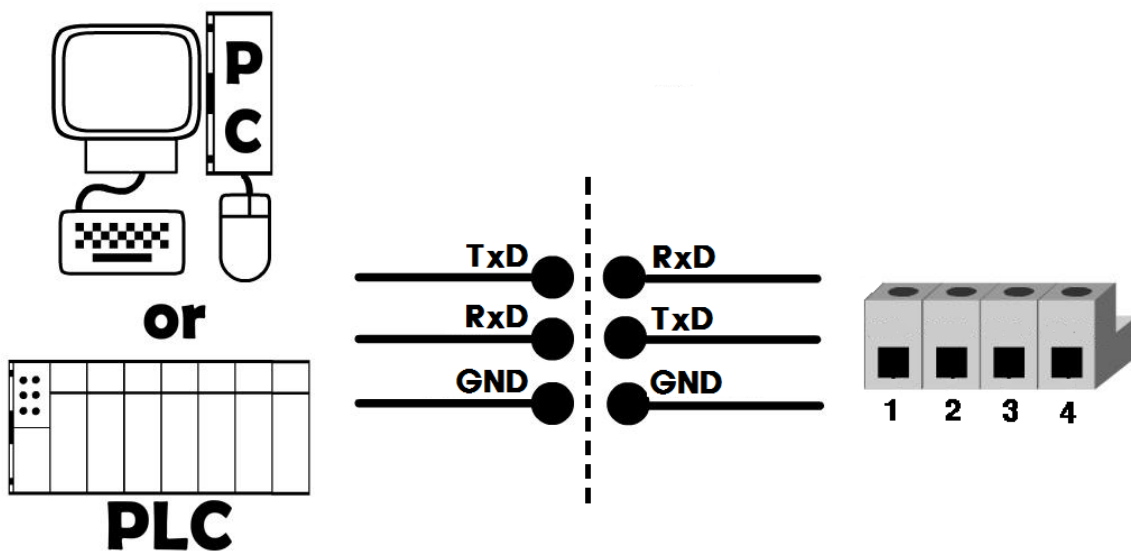
When analog output mode is 0~10V, 10V will be out if you enter 10.0

6. INTERFACE

6-1. Serial Interface

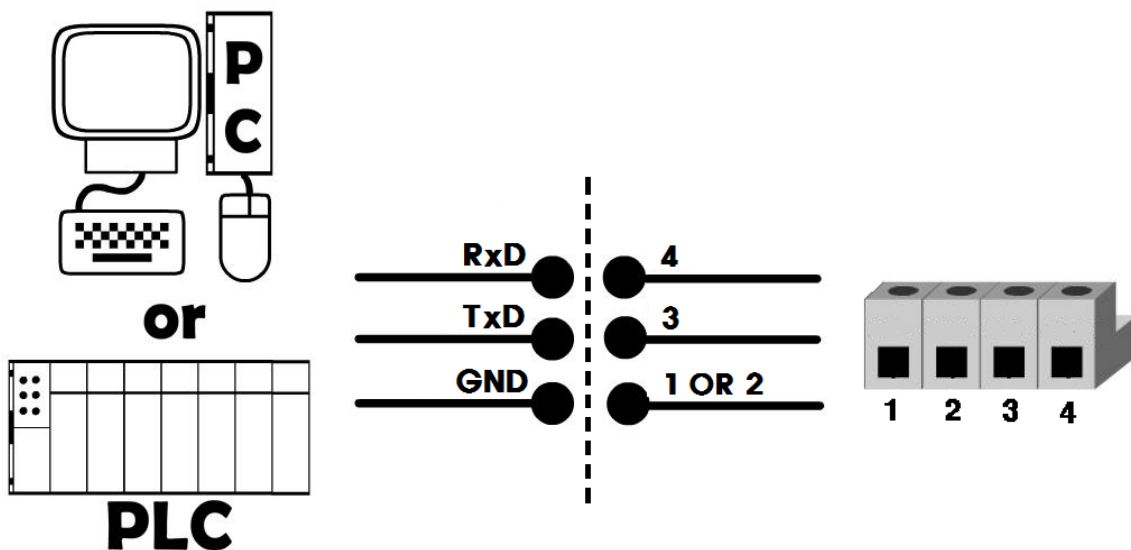
6-1-1. Main Serial Interface

(1) RS - 232

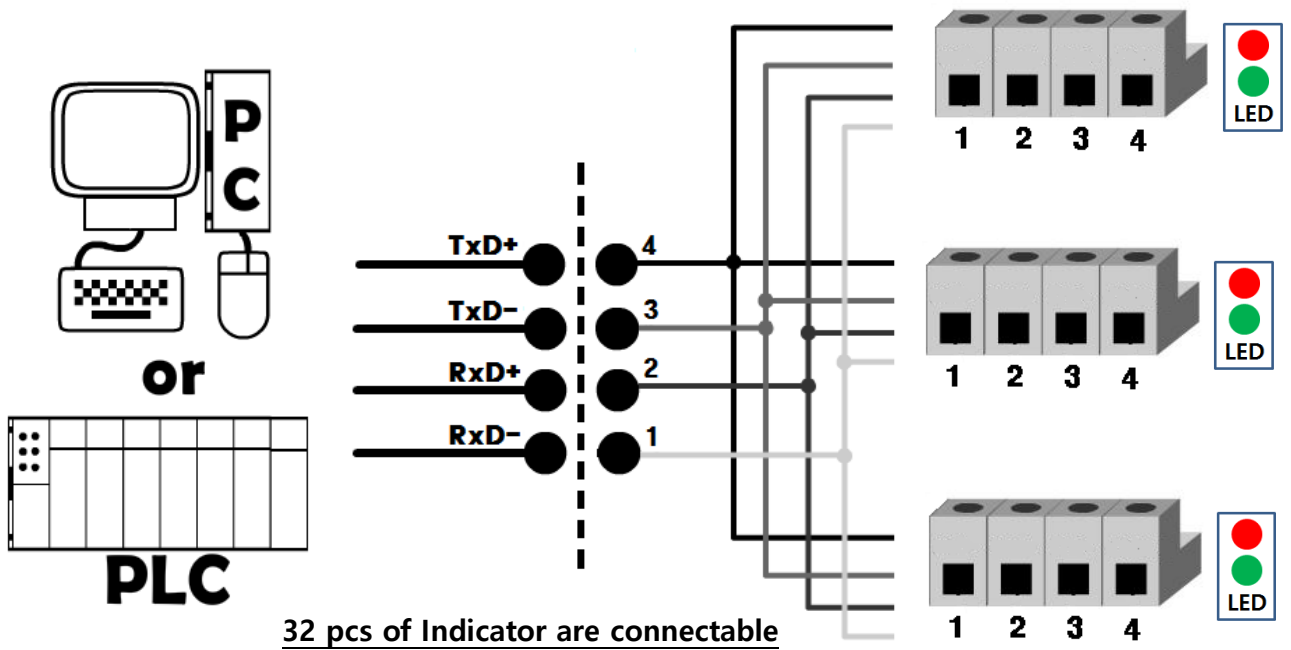


6-1-2. Option Serial Interface

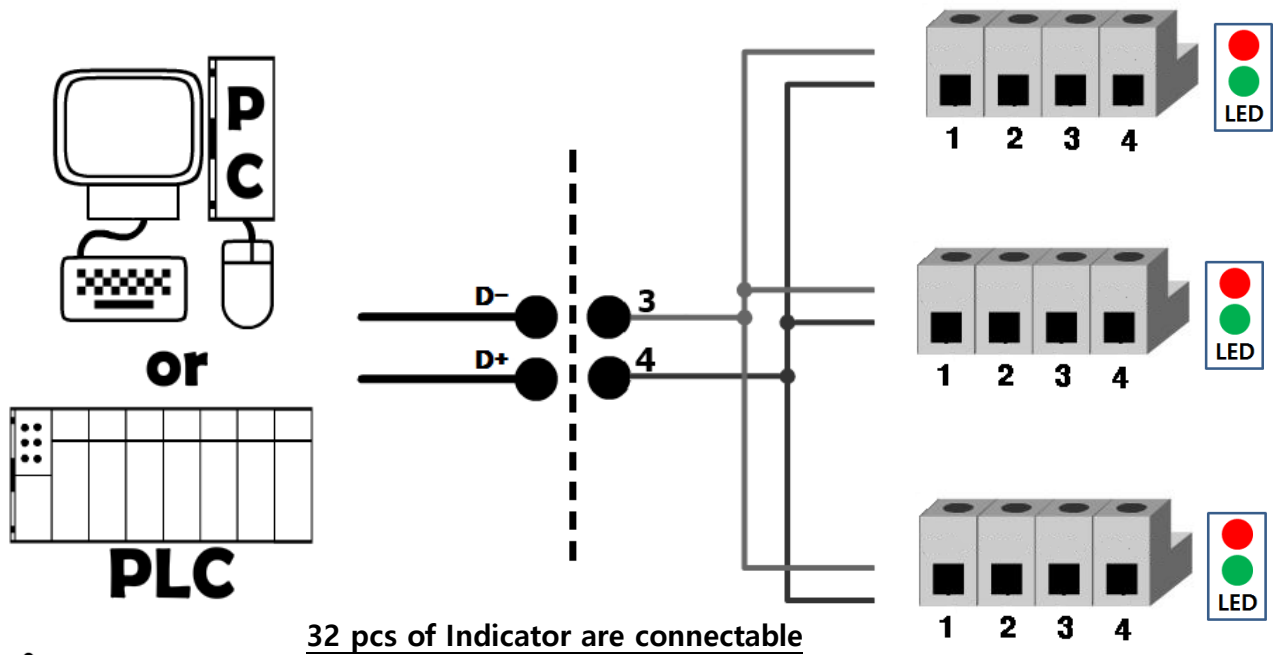
(1) RS - 232



(2) RS - 422



(3) RS - 485



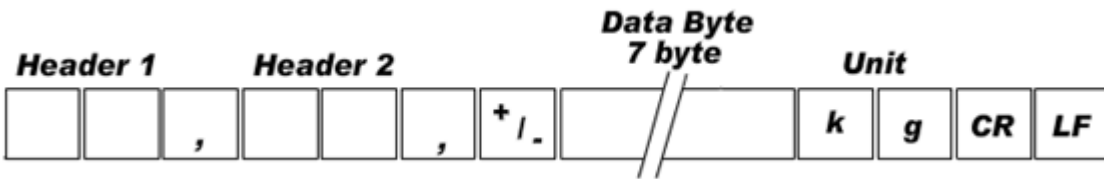
Caution

Serial communication interface is sensitive to electric noise.

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

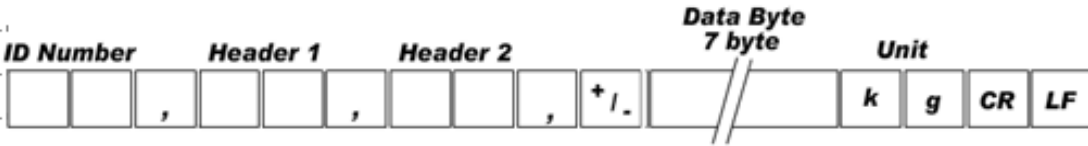
6-1-3. Data Format

(1) Data Format 1 (ID Number is not transferred, F-function 203-00) – 18 byte



Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : STEADY	GS : when setting TARE
US : UNSTEADY	

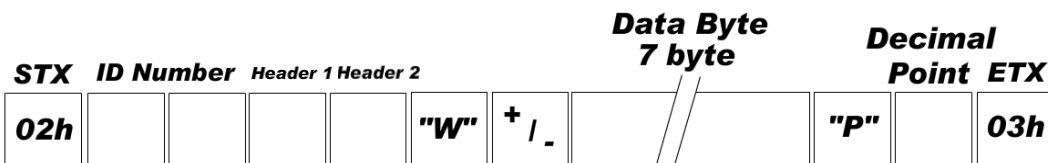
(2) Data Format 2 (ID Number+Data Transference, F-function 203-01) – 21 byte



ID Number: F-function 100

Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : STEADY	GS : when setting TARE
US : UNSTEADY	

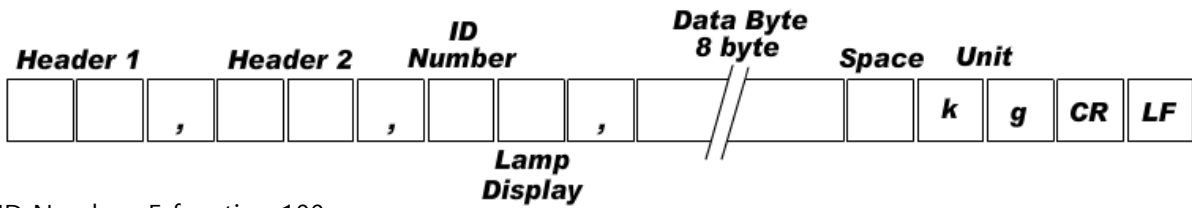
(3) Data Format 3 (ID Number+Data Transference, F-function 203-02) – 17 byte



ID Number: F-function 100

Header1	Header2
O : OVER LOAD	N : NET-WEIGHT(Tare is not set)
S : STEADY	G : when setting TARE
U : UNSTEADY	

(4) Data Format 4 (ID Number+Data Transference, F-function 203-03) – 22 byte



ID Number: F-function 100

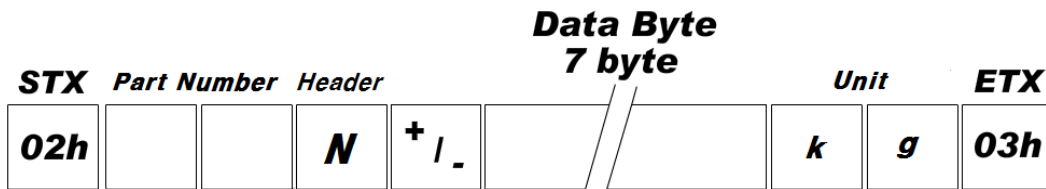
Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : STEADY	GS : when setting TARE
US : UNSTEADY	

Lamp Display

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

(5) Data Format 5 (Part Number and Judgment Transference, F-function 203-04)

For Checker mode – 15byte



6-1-4. Command Mode

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

Error Code			
0 (30h)	Normality	3 (33h)	Number data Error
1 (31h)	Check-Sum Error	4 (34h)	Excess of write data's allowable range
2 (32h)	Data length Error		

6-1-5. Read Command

Subject	Command	Length of transmission data	
		Under F-function (202/212)-01	Under F-function (202/212)-02
Current Weight	STX ID RCWT ETX	21 byte	22 byte
Current data	STX ID RCWD ETX	46 byte	44 byte
Sub-total data	STX ID RSUB ETX	30 byte	29 byte
Sub-total count	STX ID RSNO ETX	14 byte	14 byte
Grand-total data	STX ID RGRD ETX	28 byte	29 byte
Weighing completion value	STX ID RFIN ETX	17 byte	15 byte
Current time	STX ID RTIM ETX	14 byte	
Current date	STX ID RDAT ETX	14 byte	
Tare weight	STX ID RTAR ETX	17 byte	15 byte
SP1 Value	STX ID RSP1 ETX	16 byte	15 byte
SP2 Value	STX ID RSP2 ETX	16 byte	15 byte
SP3 Value	STX ID RSP3 ETX	16 byte	15 byte
SP4 Value	STX ID RSP4 ETX	16 byte	15 byte
SP1, SP2, SP3, SP4 Value	STX ID RSPA ETX	34 byte	38 byte
Current Part Number	STX ID RPNO ETX	10 byte	
Current weight, Input, Output state	STX ID RWRS ETX	30 byte	29 byte

6-1-6. Write Command

Subject	Command	Length of transmission data	
		Under F-function (202/212)-01	Under F-function (202/212)-02
Zero	STX ID WZER ETX	8 byte	
Tare	STX ID WTAR ETX	8 byte	
Tare Reset	STX ID WTRS ETX	8 byte	
Hold	STX ID WHOL ETX	8 byte	
Hold Reset	STX ID WHRS ETX	8 byte	
Print	STX ID WPRT ETX	8 byte	
Sub-total Print	STX ID WSPR ETX	8 byte	
Grand-total Print	STX ID WGPR ETX	8 byte	
Delete Sub-total	STX ID WSTC ETX	8 byte	
Delete Grand-total	STX ID WGTC ETX	8 byte	
Run	STX ID WSTR ETX	8 byte	
Stop	STX ID WSTP ETX	8 byte	
Time setting	STX ID WTIM Time (HHMMSS) ETX	14 byte	
Date setting	STX ID WDAT Date (YYMMDD) ETX	14 byte	
SP1 Value	STX ID WSP1 SP1 Value ETX	14 byte	15 byte
SP2 Value	STX ID WSP2 SP2 Value ETX	14 byte	15 byte
SP3 Value	STX ID WSP3 SP3 Value ETX	14 byte	15 byte
SP4 Value	STX ID WSP4 SP4 Value ETX	14 byte	15 byte
Part Number Setting	STX ID WPNO Part Number ETX	10 byte	
SP1, SP2, SP3, SP4	STX ID WSPA SP1 Value SP2 Value SP3 Value SP4 Value ETX	32 byte	36 byte
SP1, SP2, SP3, SP4 for all of Part Number	STX ID WFTD Part Number SP1 Value SP2 Value SP3 Value SP4 Value ETX	34 byte	38 byte

6-1-7. Read COMMAND for SI410 (Under F-function 202/212-01)

Current Weight		
ASCII : STX ID(2Byte) RCWT ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RCWT + ETX [8Byte] Transmission: STX + ID(2Byte) + RCWT + State 1(1Byte) + State 2(1Byte) + P + Decimal Point(1Byte) + Mark(1Byte) + Current weight(6Byte) + Unit(2Byte) +ETX [21Byte]	8 byte
	State1: O(Overload), S(Stable), U(Unstable) State2: N(Net Weight), G(Gross Weight)	21 byte
Current data		
ASCII : STX ID(2Byte) RCWD ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RCWD + ETX [8Byte] Transmission: STX + ID(2Byte) + RCWD + P + Decimal Point (1Byte) + Date(6Byte) + Time(6Byte) + Part Number(2Byte) + Count(6Byte) + Mark(1Byte) + Tare(6Byte) + Mark(1Byte) + Current weight(6Byte) + Unit(2Byte) +ETX [46Byte]	8 byte
		46 byte
Sub-total data		
ASCII : STX ID(2Byte) RSUB ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RSUB + ETX [8Byte] Transmission: STX + ID(2Byte) + RSUB + P + Decimal Point(1Byte) + Part Number(2Byte) + Sub-total Count(6Byte) + Sub-total weight(10Byte) + Unit(2Byte) + ETX [30Byte]	8 byte
		30 byte
Grand-total data		
ASCII : STX ID(2Byte) RGRD ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RGRD + ETX [8Byte] Transmission: STX + ID(2Byte) + RGRD + P + Decimal(1Byte) + Grand-total Count(6Byte) + Grand-total weight(10Byte) + Unit(2Byte) + ETX [28Byte]	8 byte
		28 byte
Sub-total count		
ASCII : STX ID(2Byte) RSNO ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RSNO + ETX [8Byte] Transmission: STX + ID(2Byte) + RSNO + Sub-total Count(6Byte) + ETX [14Byte]	8 byte
		14 byte
Current time		
ASCII : STX ID(2Byte) RTIM ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RTIM + ETX [8Byte] Transmission: STX + ID(2Byte) + RTIM + Time(6Byte) + ETX [14Byte]	8 byte
		14 byte

Current date		
ASCII : STX ID(2Byte) RDAT ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RDAT + ETX[8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RDAT + Date(6Byte) +ETX [14Byte]	14 byte
Tare weight		
ASCII : STX ID(2Byte) RTAR ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RTAR + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RTAR + P + Decimal Point (1Byte) + Mark(1Byte) + Tare(6Byte) + ETX [17Byte]	17 byte
Current Part Number		
ASCII : STX ID(2Byte) RPNO ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RPNO + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RPNO + Part Number(2Byte) + ETX [10Byte]	10 byte
Weighing completion value		
ASCII : STX ID(2Byte) RFIN ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RFIN + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RFIN + P + Decimal Point (1Byte) + Mark(1Byte) +Completion Weight(6Byte) + ETX [17Byte]	17 byte
SP1 Value		
ASCII : STX ID(2Byte) RSP1 ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RSP1 + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RSP1 + P + Decimal Point (1Byte) + SP1 Value(6Byte) + ETX [16Byte]	16 byte
SP2 Value		
ASCII : STX ID(2Byte) RSP2 ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RSP2 + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RSP2 + P + Decimal Point (1Byte) + SP2 Value(6Byte) + ETX [16Byte]	16 byte
SP3 Value		
ASCII : STX ID(2Byte) RSP3 ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RSP2 + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RSP2 + P + Decimal Point (1Byte) + SP2 Value(6Byte) + ETX [16Byte]	16 byte
SP4 Value		
ASCII : STX ID(2Byte) RSP4 ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RSP2 + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RSP2 + P + Decimal Point (1Byte) + SP4 Value(6Byte) + ETX [16Byte]	16 byte

Current weight, Input, Output state		
ASCII : STX ID(2Byte) RWRS ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RWRS + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RWRS + P + Decimal Point (1Byte) + Mark(1Byte) + Current weight(6Byte) + External Input(6Byte) + Relay Output (7Byte) + ETX [30Byte]	30 byte
SP1, SP2, SP3, SP4 Value		
ASCII : STX ID(2Byte) RSPA ETX		Length
SI 410 Response	Reception: STX + ID(2Byte) + RSPA + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RSPA + P + Decimal Point (1Byte) + SP1 Value(6Byte) + SP2 Value(6Byte) + SP3 Value(6Byte) + SP4 Value(6Byte) + ETX [34Byte]	34 byte

6-1-8. Write COMMAND for SI410 (Under F-function 202/212-01)

Error Code			
0 (30h)	Normality	3 (33h)	Number data Error
1 (31h)	Check-Sum Error	4 (34h)	Excess of write data's allowable range
2 (32h)	Data length Error		

COMMAND	ASCII	Length	Response
Zero	STX ID(2Byte) WZER ETX	8 byte	*Normal : STX ID(2BYTE) ACK(1BYTE) ERROR_CORD(1BYTE) ETX *Abnormal : STX ID(2BYTE) NAK(1BYTE) ERROR_CORD(1BYTE) ETX
Tare	STX ID(2Byte) WTAR ETX	8 byte	
Tare Reset	STX ID(2Byte) WTRS ETX	8 byte	
Print	STX ID(2Byte) WPRT ETX	8 byte	
Sub-total Print	STX ID(2Byte) WSPR ETX	8 byte	
Sub-total Delete	STX ID(2Byte) WSTC ETX	8 byte	
Grand-total Print	STX ID(2Byte) WGPR ETX	8 byte	
Grand-total Delete	STX ID(2Byte) WGTC ETX	8 byte	
Time Setting	STX ID(2Byte) WTIM Time(6byte) ETX	14 byte	
Date Setting	STX ID(2Byte) WDAT Date(6byte) ETX	14 byte	
Part Number Setting	STX ID(2Byte) WPNO Part Number(2 byte) ETX	10 byte	

COMMAND	ASCII	Length	Response
Hold	STX ID(2Byte) WHOL ETX	8 byte	*Normal : STX ID(2BYTE) ACK(1BYTE) ERROR_CORD(1BYTE) ETX *Abnormal : STX ID(2BYTE) NAK(1BYTE) ERROR_CORD(1BYTE) ETX
Hold Reset	STX ID(2Byte) WHRS ETX	8 byte	
Run	STX ID(2Byte) WSTR ETX	8 byte	
Stop	STX ID(2Byte) WSTP ETX	8 byte	
SP1 Value	STX ID(2Byte) WSP1 SP1Value(6Byte) ETX	14 byte	
SP2 Value	STX ID(2Byte) WSP2 SP2Value(6Byte) ETX	14 byte	
SP3 Value	STX ID(2Byte) WSP3 SP3Value(6Byte) ETX	14 byte	
SP4 Value	STX ID(2Byte) WSP4 SP4Value(6Byte) ETX	14 byte	
SP1,2,3,4 Value	STX ID(2Byte) WSPA SP1 Value(6Byte) SP2 Value(6Byte) SP3 Value(6Byte) SP4 Value(6Byte) ETX	32 byte	
SP1, SP2, SP3, SP4 for all of Part Number	STX ID(2Byte) WFTD Part Number(2Byte) SP1 Value(6Byte) SP2 Value(6Byte) SP3 Value(6Byte) SP4 Value(6Byte) ETX	34 byte	

Tip

<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

6-1-9. Read COMMAND (F-function 202/212-2)

Current Weight	
ASCII : STX ID(2Byte) RCWT ETX	HEX : 02 30 31 52 43 57 54 03
Response	STX ID RCWT State1(2byte) State2(2byte) Mark+/(1byte) Current Weight(7byte) Unit(2byte) ETX State1: OL(Overload), ST(Stable), US(Unstable) State2: NT(Net Weight), GS(Gross Weight)
Current data	
ASCII : STX ID(2Byte) RCWD ETX	HEX : 02 30 31 52 43 57 44 03
Response	STX ID RCWD Date(6byte) Time(6byte) Part Number(2byte) Count(6byte) Tare(7Byte) Mark+/(1byte) Current Weight (7byte) Unit(2byte) ETX
Sub-total data	
ASCII : STX ID(2Byte) RSUB ETX	HEX : 02 30 31 52 53 55 42 03
Response	STX ID RSUB Part Number(2byte) Sub-total Count(6byte) Sub-total Weight(11byte) Unit(2byte) ETX
Sub-total count	
ASCII : STX ID(2Byte) RSNO ETX	HEX : 02 30 31 52 53 4E 4F 03
Response	STX ID RSNO Sub-total count(6byte) ETX
Grand-total data	
ASCII : STX ID(2Byte) RGRD ETX	HEX : 02 30 31 52 47 52 44 03
Response	STX ID RGRD Part Number(2byte) Grand-total Count(6byte) Grand-total Weight(11byte) Unit(2byte) ETX
Weighing completion value	
ASCII : STX ID(2Byte) RFIN ETX	HEX : 02 30 31 52 46 49 4E 03
Response	STX ID RFIN Completion Weight(7byte) ETX
Current Time	
ASCII : STX ID(2Byte) RTIM ETX	HEX : 02 30 31 52 54 49 4D 03
Response	STX ID RTIM Current time(6byte) ETX
Current Date	
ASCII : STX ID(2Byte) RDAT ETX	HEX : 02 30 31 52 44 41 54 03
Response	STX ID RDAT Current Date(6byte) ETX
Tare weight	
ASCII : STX ID(2Byte) RTAR ETX	HEX : 02 30 31 52 54 41 52 03
Response	STX ID RTAR Tare(7byte) ETX

SP 1 Value	
ASCII : STX ID(2Byte) RSP1 ETX	HEX : 02 30 31 52 53 50 31 03
Response	STX ID RSP1 SP1 Value(7byte) ETX
SP 2 Value	
ASCII : STX ID(2Byte) RSP2 ETX	HEX : 02 30 31 52 53 50 32 03
Response	STX ID RSP2 SP2 Value (7byte) ETX
SP 3 Value	
ASCII : STX ID(2Byte) RSP3 ETX	HEX : 02 30 31 52 53 50 33 03
Response	STX ID RSP3 SP3 Value (7byte) ETX
SP 4 Value	
ASCII :STX ID(2Byte) RSP4 ETX	HEX : 02 30 31 52 53 50 34 03
Response	STX ID RSP4 SP4 Value (7byte) ETX
SP1, SP2, SP3, SP4 Value	
ASCII :STX ID(2byte) RSPA ETX	HEX :02 30 31 52 53 50 41 03
Response	STX ID RSPA P Decimal Point (1byte) SP1 Value(7byte) SP2 Value(7byte) SP3 Value(7byte) SP4 Value(7byte) ETX
Current Part Number	
ASCII : STX ID(2Byte) RPNO ETX	HEX : 02 30 31 52 50 4E 4F 03
Response	STX ID RPNO Part Number(2byte) ETX
Current weight, Input, Output state	
ASCII :STX ID(2Byte) RWRS ETX	HEX :02 30 31 52 57 52 53 03
Response	STX ID RWRS Mark+/- (1byte) 현중량(7byte)INPUT1,2,3,4,5,6(6byte) OUTPUT1,2,3,4,5,6,7(7byte) ETX (Input/Output: 1, ???: 0)

6-1-10. Write COMMAND (F-function 202/212-2)

COMMAND	ASCII	Length	Response
Zero	STX ID(2Byte) WZER ETX	8 byte	*Normal : STX ID ACK ETX *Abnormal : STX ID NAK ETX
Tare	STX ID(2Byte) WTAR ETX	8 byte	
Tare Reset	STX ID(2Byte) WTRS ETX	8 byte	
Print	STX ID(2Byte) WPRT ETX	8 byte	
Sub-total Print	STX ID(2Byte) WSPR ETX	8 byte	
Sub-total Delete	STX ID(2Byte) WSTC ETX	8 byte	
Grand-total Print	STX ID(2Byte) WGPR ETX	8 byte	
Grand-total Delete	STX ID(2Byte) WGTC ETX	8 byte	
Time Setting	STX ID(2Byte) WTIM Time(6byte) ETX	14 byte	
Date Setting	STX ID(2Byte) WDAT Date(6byte) ETX	14 byte	
Part Number Setting	STX ID(2Byte) WPNO Part Number(2 byte) ETX	10 byte	
Hold	STX ID(2Byte) WHOL ETX	8 byte	
Hold Reset	STX ID(2Byte) WHRS ETX	8 byte	
Run	STX ID(2Byte) WSTR ETX	8 byte	
Stop	STX ID(2Byte) WSTP ETX	8 byte	
SP1 Value	STX ID(2Byte) WSP1 SP1Value(6Byte) ETX	15 byte	
SP2 Value	STX ID(2Byte) WSP2 SP2Value(6Byte) ETX	15 byte	
SP3 Value	STX ID(2Byte) WSP3 SP3Value(6Byte) ETX	15 byte	
SP4 Value	STX ID(2Byte) WSP4 SP4Value(6Byte) ETX	15 byte	
SP1,2,3,4 Value	STX ID(2Byte) WSPA SP1 Value(6Byte) SP2 Value(6Byte) SP3 Value(6Byte) SP4 Value(6Byte) ETX	36 byte	

COMMAND	ASCII	Length	Response
SP1, SP2, SP3, SP4 for all of Part Number	STX ID(2Byte) WFTD Part Number(2Byte) SP1 Value(6Byte) SP2 Value(6Byte) SP3 Value(6Byte) SP4 Value(6Byte) ETX	38 byte	*Normal : STX ID ACK ETX *Abnormal : STX ID NAK ETX

Tip

<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

6-1-9. Modbus Memory Map

- Detail Modbus Memory Map is updated in SEWHA CNM homepage.

Tip

RO : Read Only

- RW : Read Write

- Each P/N's set point can't over max capacity of Indicator.

ex) 35.00kg = 3,500 (0xDAC)

- When you input date and time, it should be 6digit.

ex) 1st January 2014 = 140101 (0x22345)

15(H) : 50(M) : 17(S) = 155017 (0x25D89)

- Refer the memory register for regarding Lamp, Error, Digital Input, Standard Key, Special Key

- Modbus Function Codes

'03' (0x03) : Read Holding Registers

'04' (0x04) : Read Input Registers

'06' (0x06) : Write Single Registers

'16' (0x10) : Write Multiple Registers

- CRC Check Method is CRC-16.

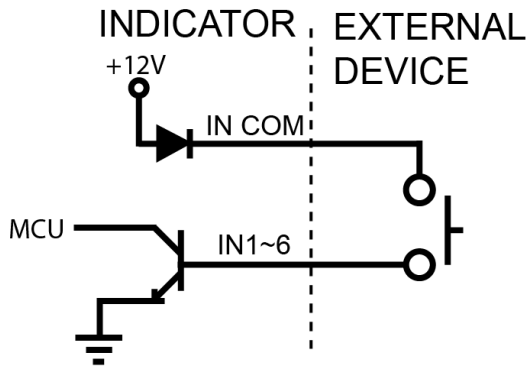
Address	Length	Feature	Description
150	2	RO	Capacity
154	2	RO	Analog Value
156	2	RO	Span Value
158	1	RO	Division
159	1	RO	Decimal point
160	2	RO	Current Weight
162	2	RO	Tare Weight
166	2	RO	Measured Weight
170	2	RO	Digital input
172	2	RO	Lamp
174	2	RO	Error
176	2	RO	Weighing Mode
178	2	RO	Weighing Step

Address	Length	Feature	Description
180	2	RO	Current P/N Sub-total count
182	2	RO	Current P/N Sub-total Weight
184	2	RO	Grand-total Count
186	2	RO	Grand-total Weight
388	2	RW	Date
390	2	RW	Time
392	1	RW	Key value
394	1	RW	Relay output
395	1	RW	P/N
396	2	RW	Current P/N Set point 1
398	2	RW	Current P/N Set point 2
400	2	RW	Current P/N Set point 3
402	2	RW	Current P/N Set point 4

6-2. External input

Each external input's function is selectable from function 156~161.

6-2-1. External input circuit composition



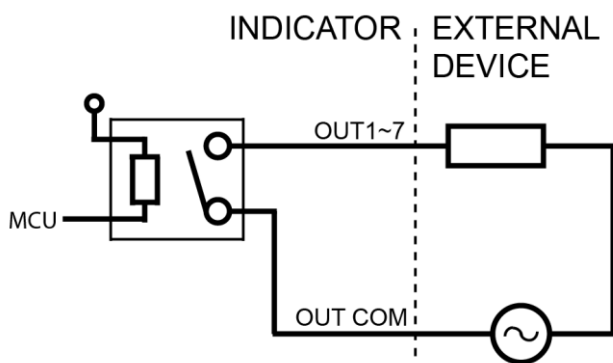
6-3. Relay output

7pcs relay out A dry : Each relay output's function is selectable from function 140~147.

6-3-1. Specification

Contact Ratings VDC	Contact Ratings VAC
24V 3A	250V 3A

6-3-2. Relay output circuit composition



If you enter to Calibration or Test mode, Relay output will be off except OUT7



Caution

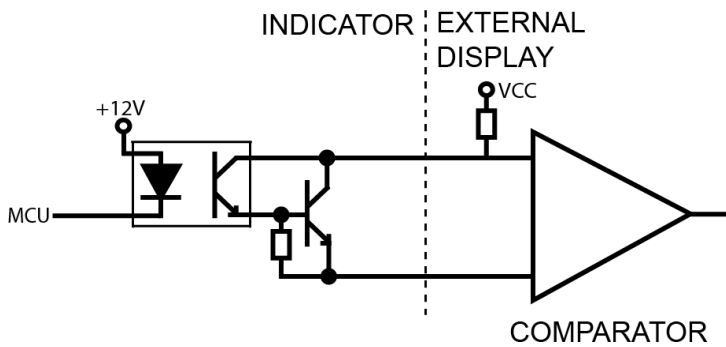
If you use higher voltage than relay specification, indicator might be damaged.

6-4. Current loop

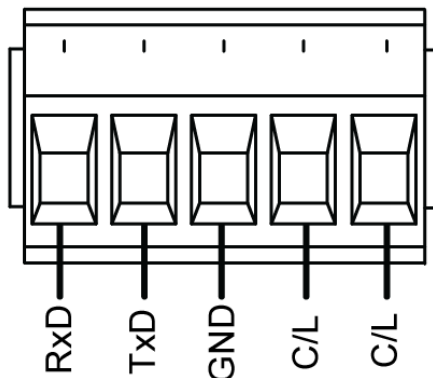
Current loop is suitable for middle distance transmission because stronger than RS-232C against electric noise. (approximate 100M)

Tip Maximum communication speed is 9,600.

6-4-1. Current loop circuit composition



6-4-2. Connection



RxD	TxD	GND	C/L	C/L
RS232	RS232	RS232	TxD	TxD

6-5. Analogue I-Output Interface : 4~20mA

This output card converts weight value to Analog output signal (4~20mA) and transfers to external devices(Recorder, P.L.C), controlled by voltage output.

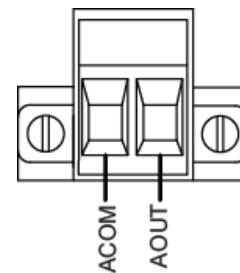
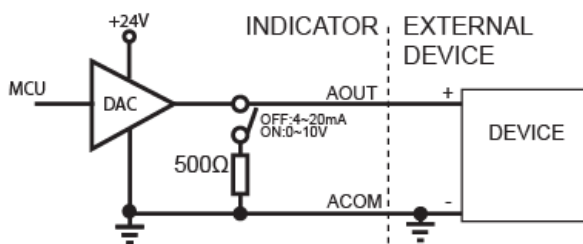
6-5-1. Specification

Output current	Accuracy	Temperature compensation	Max Loaded Impedance
0mA ~ 22mA이하	1/5,000	0.01%℃	500Ω MAX.

Tip Under Calibration mode or "CELL-ERR" condition, Analogue output will not activated. If the output is deactivated, the last output signal value will be hold until next activation. This is not suitable for the system which requires high accuracy over 1/5,000.

6-5-2. Circuit composition and connector

4-20mA will be out proportioned on current weight



ACOM	AOUT
-	+

6-5-3. Output Adjustment

- (1) Default analog output value is 4mA(weight zero) ~ 20mA(Full capacity).
- (2) The analogue output value is adjusted with DIGITAL MULTI-METER.
- (3) How to adjust analog output value.

Step1) Connect Digital multi meter to the Indicator (A out terminal).

Step2) Enter "Hidden function HF10 Minimum Analog Output Setting" mode.

Step3) Adjust the displaying value of indicator with keys(-20~+20) to make Digital multi meter's value as minimum(ex:4mA) and save.

Step4) Enter "F-function HF11 Maximum Analog Output Setting" mode

Step5) after connect digital multi meter to the indicator, then adjust the displaying value of indicator with keys (-20~+20) to make Digital multi meter's value as maximum (ex:20mA)

6-6 Analog V-Output Interface : 0~10V

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

6-6-1. Specification

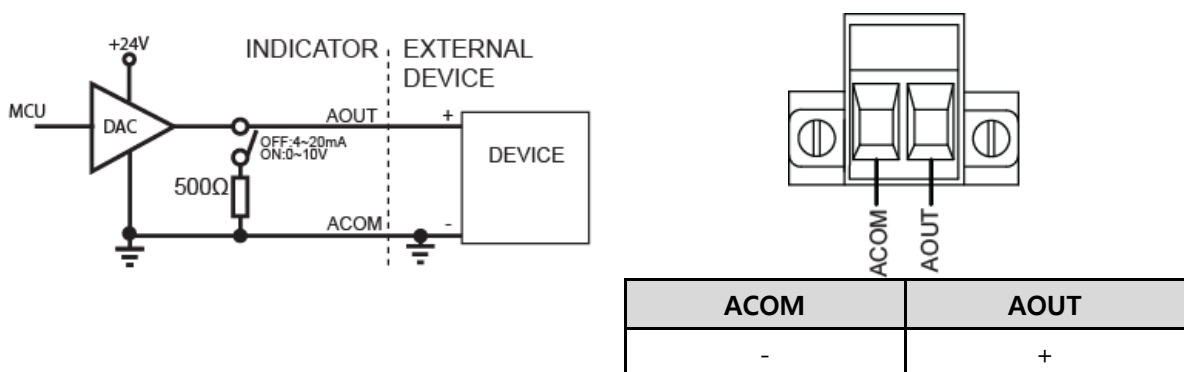
Output Voltage	0~10V DC output
Accuracy	1/5,000

Tip

Under Calibration mode or "CELL-ERR" condition, Analogue output will not activated.
If the output is deactivated, the last output signal value will be hold until next activation.
This is not suitable for the system which requires high accuracy over 1/5,000.

6-6-2. Circuit composition and connector

0-10V will be out proportioned on current weight.



6-6-3. Output Adjustment

- (1) Default analog output value is 0V(weight zero) ~ 10V(Full capacity).
- (2) The analogue output value is adjusted with DIGITAL MULTI-METER.
- (3) How to adjust analog output value.

Step1) Connect Digital multi meter to the Indicator (A out terminal).

Step2) Enter "Hidden function HF10 Minimum Analog Output Setting" mode.

Step3) Adjust the displaying value of indicator with keys (-20~+20) to make Digital multi meter's value as minimum (ex: 0V) and save.(When the SI 460C indicates about 30,150 , the Digital multi meter indicates about 10V)

Step4) Enter "F-function HF11 Maximum Analog Output Setting" mode

Step5) after connect digital multi meter to the indicator, then adjust the displaying value of indicator with keys (-20~+20) to make Digital multi meter's value as maximum (ex: 10V).

6-7. Analog output selection

- (1) On the option board, there is switch for analog output selection 4-20mA or 0-10V.
- (2) "HF09 Analog output setting" should be changed also.

6-8. Print Interface

It can be connected with all kinds of Serial interface printer, but the printing format is already programmed and fixed with SE7200/7300 model.

6-8-1. Print Format (F-function 202-02 or 212 -02)

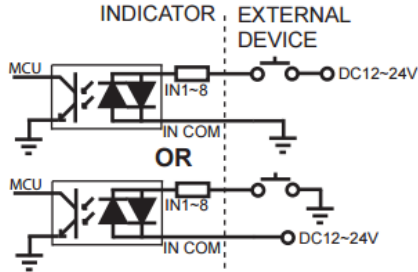
	Korean(120-00)	English (120-01)
Continuous Print 121-00	<pre> ===== 날짜 : 2011-05-10 시간 : 18:00:10 장비번호 : 1 장비 품번 순번 중량 1 10 1 1.330kg 1 10 2 5.350kg 1 10 3 2.358kg </pre>	<pre> ===== DATE : 2011-05-10 TIME : 18:00:10 ID No : 1 ID PART SERIAL WEIGHT 1 10 1 1.330kg 1 10 2 5.350kg 1 10 3 2.358kg </pre>
Single Print 121-02	<pre> ===== 날짜 : 2011-05-10 시간 : 18:00:10 장비번호 : 1 장비 품번 순번 중량 1 10 1 1.330kg ===== 날짜 : 2011-05-10 시간 : 18:00:10 장비번호 : 1 장비 품번 순번 중량 1 10 2 5.350kg </pre>	<pre> ===== DATE : 2011-05-10 TIME : 18:00:10 ID No : 1 ID PART SERIAL WEIGHT 1 10 1 1.330kg ===== DATE : 2011-05-10 TIME : 18:00:10 ID No : 1 ID PART SERIAL WEIGHT 1 10 2 5.350kg </pre>
Grand-total Print	<pre> ===== 총 계 날짜 : 2011-05-10 시간 : 18:00:10 장비번호 : 1 품번 순번 중량 1 15 105.21kg 2 21 172.92kg : : 49 13 105.21kg 50 27 172.92kg 총계량릿수 : 143 총계중량 : 700.35kg ===== </pre>	<pre> ===== TOTAL DATE : 2011-05-10 TIME : 18:00:10 ID No : 1 PART SERIAL WEIGHT 1 15 105.21kg 2 27 172.92kg : : 49 13 105.21kg 50 21 172.92kg TOTAL COUNT : 143 TOTAL WEIGHT : 700.35kg ===== </pre>

Tip Date and Time data is printed in Continuous Print mode such as Single Print Mode, if it is first print out.

6-9. BIN IN card (Changing Product number)

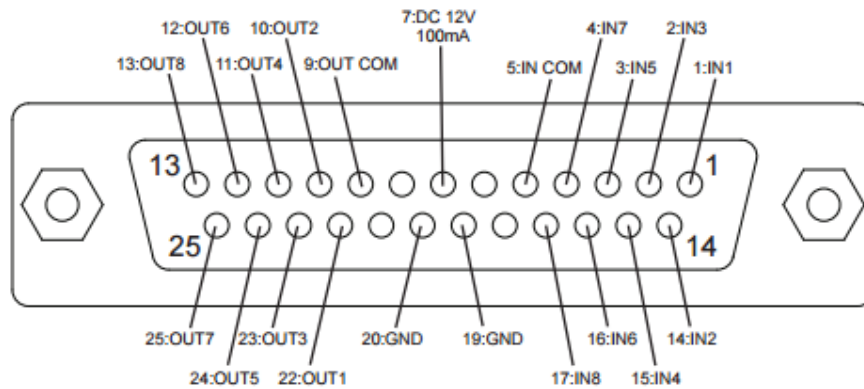
6-9-1. BIN IN card circuit composition

INPUT



6-9-2. BIN IN card connection

CONNECTOR D-SUB 25P FEMALE

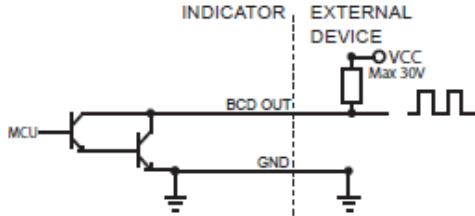


PIN No.	1	14	2	15	3	16	4	17	5
Role	IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN COM
Function 310-01	1	2	4	8	10	20	40	-	-
Function 310-02	1	2	4	8	16	-	-	-	-
Function 310-03	1	2	3	4	5	6	7	8	-

6-10. BCD OUT Card (Weight data out)

6-10-1. Circuit composition

BCD OUTPUT



6-10-2. BCD OUT Card switch setting

Non-invert or Invert are selectable by Switch of inner PCB

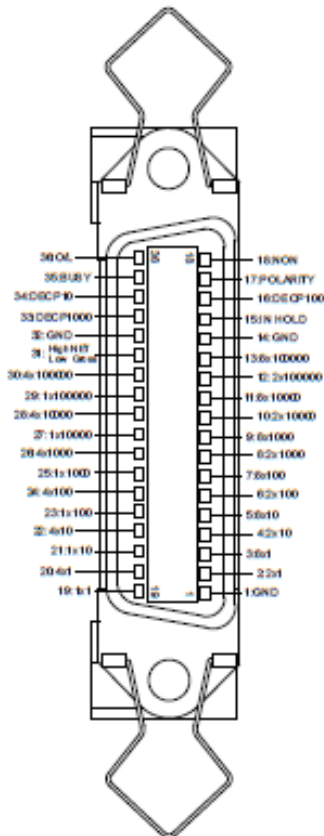
Switch	Standard	On operation
NON-INVERT	HIGH	LOW
INVERT	LOW	HIGH

6-10-3. BCD OUT card specification

MAX Input Voltage	30V 500mA
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Remark: If BCD-OUT option is needed, F250 must set as 00

6-10-4. BCD OUT card connection

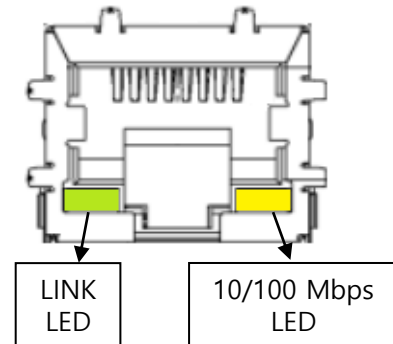


Role	Pin No.	Role	Pin No.
1X1	19	4X10000	28
2X1	2	8X10000	11
4X1	20	1X100000	29
8X1	3	2X100000	12
1X10	21	4X100000	30
2X10	4	8X100000	13
4X10	22	COM	32
8X10	5	Net weight (HIGH)	31
1X100	23	Gross weight (LOW)	31
2X100	6	GND	1, 14
4X100	24	None	15
8X100	7	Decimal Point 0.000	33
1X1000	25	Decimal Point 0.00	16
2X1000	8	Decimal Point 0.0	34
4X1000	26	Mark (Output : -)	17
8X1000	9	None	35
1X10000	27	None	18
2X10000	10	Over load	36

6-11. Ethernet card

Using this Ethernet communication, indicator and other external devices can be communicate (10/100Mbps)..

F-function 250-00	(Stream Mode)
F-function 250-01	(Command Mode)



6-12. SD Option Card

Weighing data will be saved to SD memory card depends on your function 102..



SD Memory option card has to be installed OP2 slot.

6-11-1. Saving format (File name: YYMMDD.CSV (Ex: 140728.CSV))

DATE	TIME	ID	PART	SERIAL	SP1	SP2	SP3	SP3	WEIGHT	UNIT
2014-07-18	12:18:04	1	50	22	10	20	50	60	80	KG
2014-07-18	12:18:10	1	50	23	20	30	60	70	90	KG
2014-07-18	12:18:10	1	50	24	30	40	70	80	100	KG

6-11-2. Grand-total weight format (File name: TYYMMDD.CSV (Ex: T140728.CSV))

Grand-total weight will be saved when Grand-total print is pressed.

DATE	TIME	TOTAL COUNT	TOTAL WEIGHT	UNIT						
2014-07-18	12:27:30	17	4622.0	Kg						
ID	PART No	SUB COUNT	SP1	SP2	SP3	SP4	SUB WEIGHT	UNIT		
1	1	5	10	20	30	40	50	KG		
1	2	8	10	20	30	40	50	KG		
1	3	2	10	20	30	40	50	KG		

6-11-3.Sub-total weight format(File name : TYMMDD.CSV (예: S140728.CSV))

DATE	TIME	ID	PART	SUB COUNT	SP1	SP2	SP3	SP3	SUB WEIGHT	UNIT
2014-07-18	12:18:04	1	50	22	10	20	50	60	80	KG
2014-07-18	12:18:10	1	50	23	20	30	60	70	90	KG
2014-07-18	12:18:10	1	50	24	30	40	70	80	100	KG

6-11-4 Recommended model

Memory	Model	Form factor	Class
4G	SanDisk SDHC 4G	SDHC	4



Regular BACK UP is recommended because there is limit of memory.

How to do memory card format : Connect SD card to PC, and select FORMAT from PC system folder. Select FAT32 from file system

6-13. Option card combination

Maximum 2EA of option card can be installed. Below combination is available.

	SERIAL (232)	SERIAL (422,485)	ETHER NET	BCD OUT	BIN I&O	AOUT	SD CARD
SERIAL(232)	X	X	O	O	O	O	O
SERIAL(422,485)	X	X	O	O	O	O	O
ETHERNET	O	O	X	X	O	O	O
BCD OUT	O	O	X	X	O	O	O
BIN I&O	O	O	O	O	X	O	O
AOUT	O	O	O	O	O	X	O
SD CARD	O	O	O	O	O	O	X

7. Error & Treatment

7-1. Load Cell Installation

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

7-2. Calibration Process

Display	Cause	Treatment
<i>Err-01</i>	When Max capacity/digit value is over 20,000	Re-input the Max Capacity, less than 20.00 (Max Capacity / Digit)
<i>Err-04</i>	Standard weight value is over than Max Capacity	Re-input Standard weight value with Number keys, under Max Capacity
<i>Err-05</i>	Standard weight value is less than 10% of Max Capacity	Re-input Standard weight value with Number keys, more than 10% of Max Capacity
<i>Err-06</i>	Amp. Gain is too big	Check standard weight's weight with set value. If there is difference between set value and real weight, please re-input the value (set value is too small)
<i>Err-07</i>	Amp. Gain is too small	Check standard weight's weight with set value. If there is difference between set value and real weight, please re-input the value (set value is too big)
<i>Err-08</i>	Under "F-function" model, set value is "N.A"	Check the correct value and re-input
<i>Err-09</i>	Ethernet option function set error	Re-set Ethernet option card function. (F-function 405~417)
<i>Err-A</i>	When there is continuous vibration on the weighing part,, indicator cannot process calibration any more.	- Find vibration cause and remove - Load cell check - Load cell cable and connecting condition check

※ "*Err 06 / Err 07*" are displayed under situation when it is hard to calculate span value by the load.

7-3. Digital Weighing Indicator

Display	Cause	Treatment
<p>"CELL"</p> <p>or</p> <p>"OVER"</p>	<p>1. Load cell Error</p> <p>2. Load cell cable Error</p> <p>3. Load cell connection Error</p> <p>4. A/D Board Error</p> <p>5. If Analogue value is over 1,040,000.</p> <p>※ When weigh "-" value, If it is over set max capa, "OVER" is displayed.</p> <p>Ex) Even though set max capa is "100" and it is over "-100", "OVER" is displayed.</p>	<p>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.</p> <p>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.</p> <p>3. Try to connect the indicator's A/D with the other indicator.</p> <p>4. Check the power and connection of terminal.</p>
"UnPASS"	<p>1. Power is ON, when some materials are on weighing part.</p> <p>※ 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.</p> <p>※ Setting Back-up mode it can memory empty value, and it becomes set value without displaying" Un-pass")</p>	<p>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.</p> <p>2. Please try to set F-function 102-02(Back-up) mode so that the indicator can remember first empty value.</p>
"SEt in"	<p>When Power is on, "SET" displays.</p> <p>It means EEPROM has some problem.</p>	Please contact the distributor or Head Office.
"HALT"	H/W has some problem.	
"t-Err"	The dead Battery	

※ Under "Cell-er", Zero key, Tare key, Hold key and print key will not be activated, and Analog Output(4~20mA/0~10V), either.

WARRANTY CERTIFICATION

This product is passed "Sewhacnm's strict quality test.
 If there is defect of manufacturing or abnormal detection within warranty period,
 please contact our Agent or Distributor with this Warranty certificate.
 Then, we will repair or replace free of charge.

WARRANTY CLAUSE

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

2. Warranty Exception Clause

- Warranty 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 "**Warranty Certification**".

3. Other

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

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	Model	SI 410
	Serial No.	
	AUTHORIZED STAMP	