



Approved for Digital
Weigh Indicator

Digital Weighing Indicator SI 410

User Manual



Ver.1.0 140825



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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

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

Head Office : SEWHACNM CO., LTD.

Website : <http://www.sewhacnm.co.kr>

Email : sales@sewhacnm.co.kr

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 Greed 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	

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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)



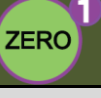

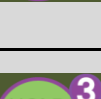
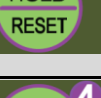










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3-3-2. State LED




























LED	State
STEADY	When the weight is stable, ON.
ZERO	When the current weight is 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 OUT4 is ON, Under Function 223-03.
LOW	Activated on only under display test mode.
kg	Displayed weight unit under Function 110-00
g	Displayed weight unit under Function 110-01
t	Displayed weight unit under Function 110-02
%	Displayed weight unit under Function 110-03
pcs	Displayed weight unit under Function 110-04
oz	Displayed weight unit under Function 110-05
lb	Displayed weight unit under Function 110-06

3-3-3. Key Operation

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

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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
			Delete the Sub-total weight
			Delete the Grand-total weight

Tip

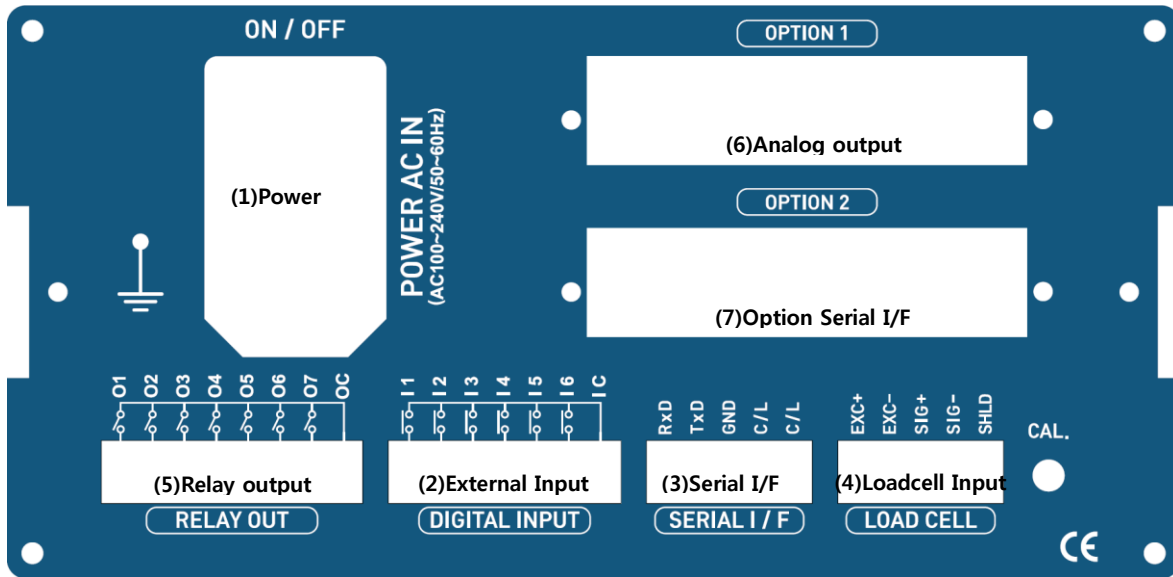
Max accumulated weighing count : 999,999times

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 233~238)

(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 226~232), 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	-	+	
4~20mA	(-)	(+)	Option
0~10V	(-)	(+)	Option

(7) Option serial interface terminal

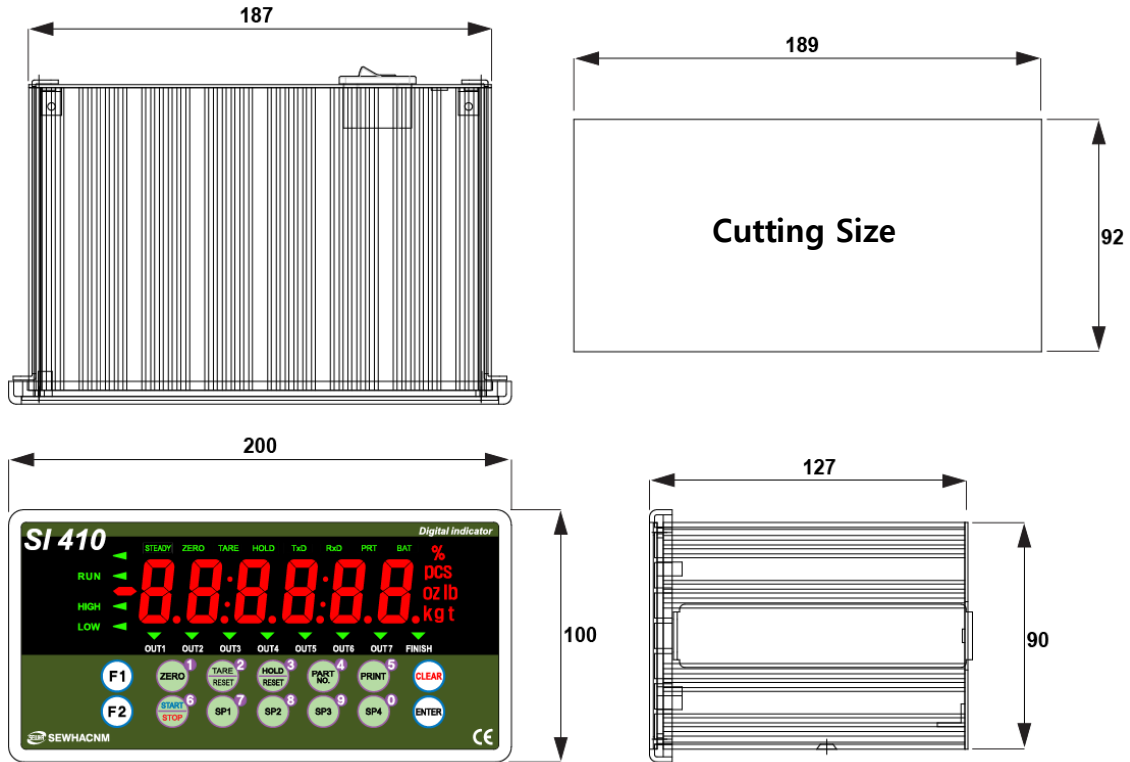
Terminal	1	2	3	4	
RS - 232C	GND	GND	Rx	Tx	Option
RS - 422	TxD-	TxD+	RxD-	RxD+	Option
RS - 485	Unused	Unused	D-	D+	Option



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



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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.

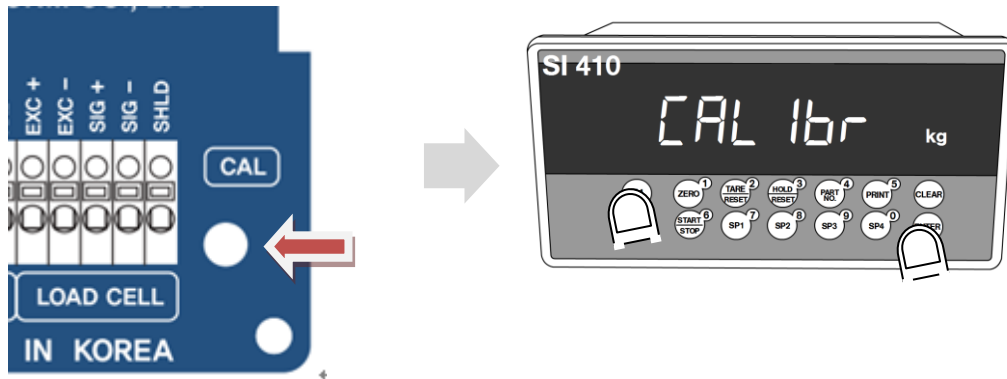
■ Load Cell Installation

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. Test Weight Calibration Mode (Using test weight)

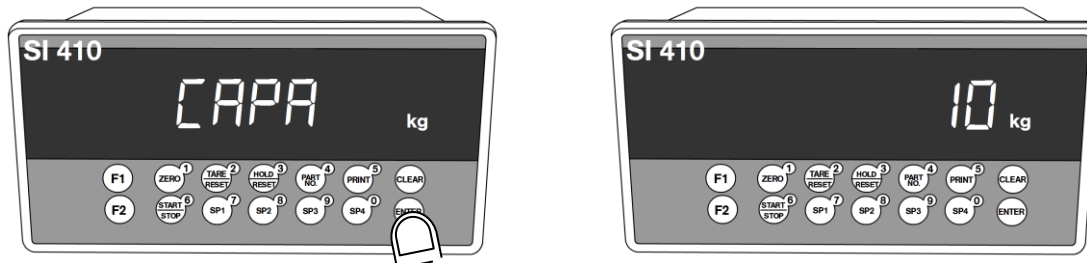
5-1-1. Start Test Weight Calibration Mode



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.

5-1-3. 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

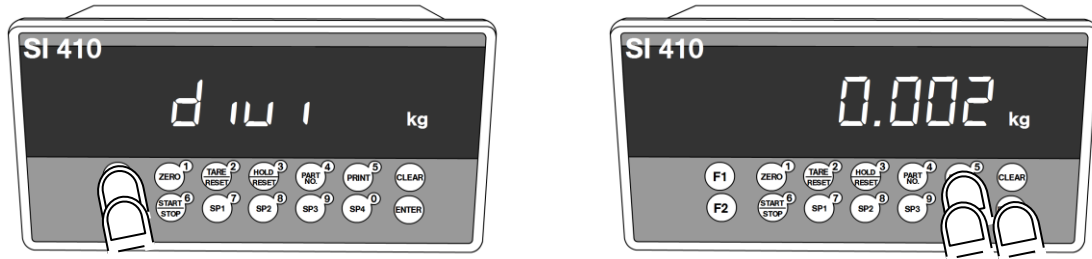
key for going back to zero,

F2

key for gradual decrease from unit digit.

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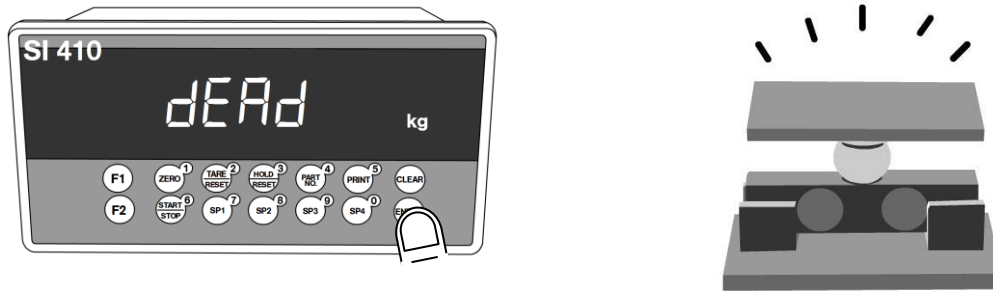
5-1-4. Decimal point and division setting



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.

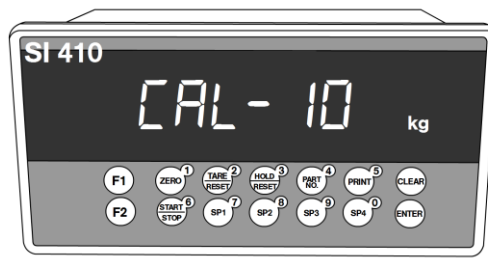
Tip Max decimal point will be 0.001, and digit can be selected among 1, 2, 5, 10, 20, 50. Digit and decimal point must be fulfilled under the below condition.
(division value / Max capacity value) cannot be over 1/20,000. If this condition is not fulfilled, "err-1" will be displayed and move back to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

5-1-5. 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.)

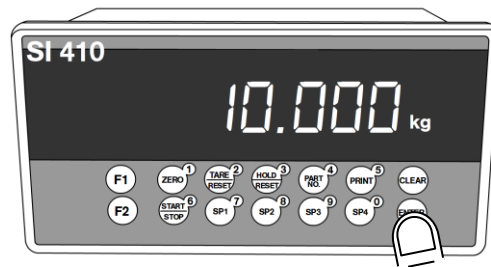
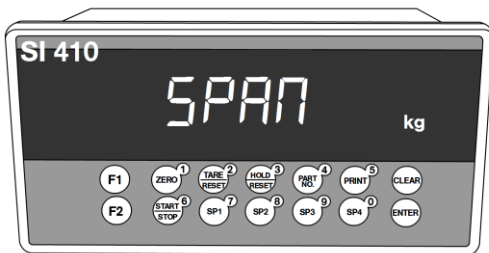
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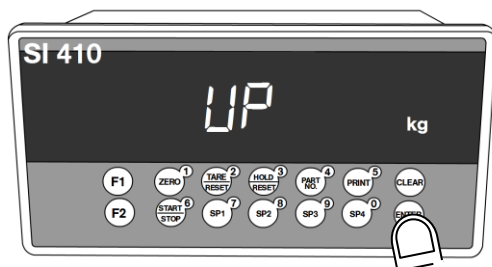
Indicator will search "DEAE weight" during 10secs automatically to find the best condition.


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.

5-1-6. Calculating span value

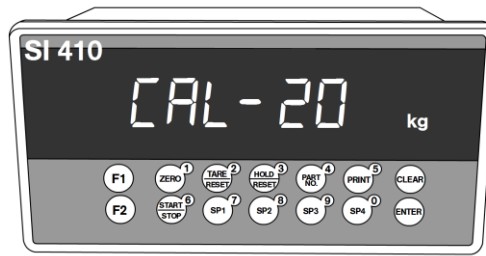


If the count is over, input the weight of your "Test Weight" and press  key.

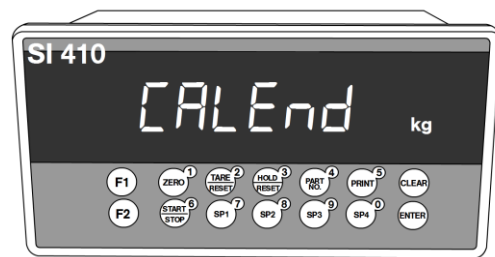
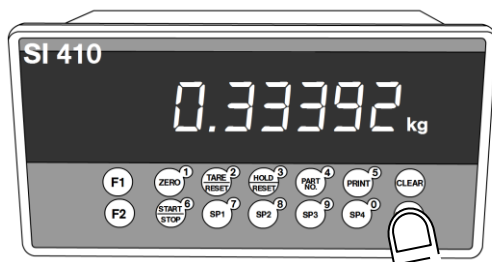


If "UP" is displayed, please load "Test Weight" on the scale part and press  key.

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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.

Tip

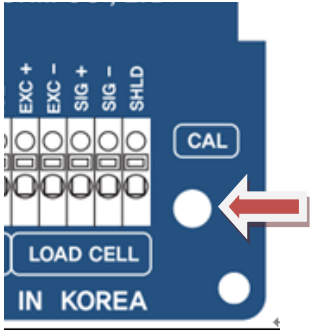
We recommend to proceed this span value calculation step when "STEADY" is displayed.

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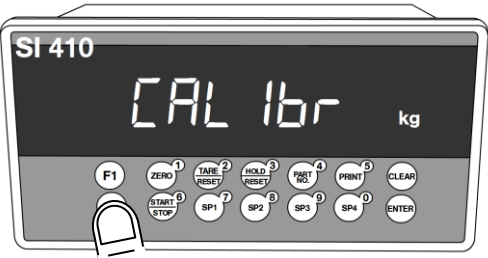
5-2. Simulation Calibration Mode (Calibrate without Test weight)


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.

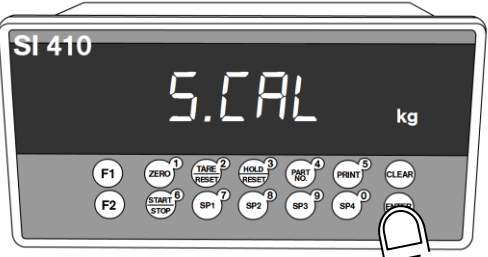
5-2-1. Simulation Calibration Mode Start




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



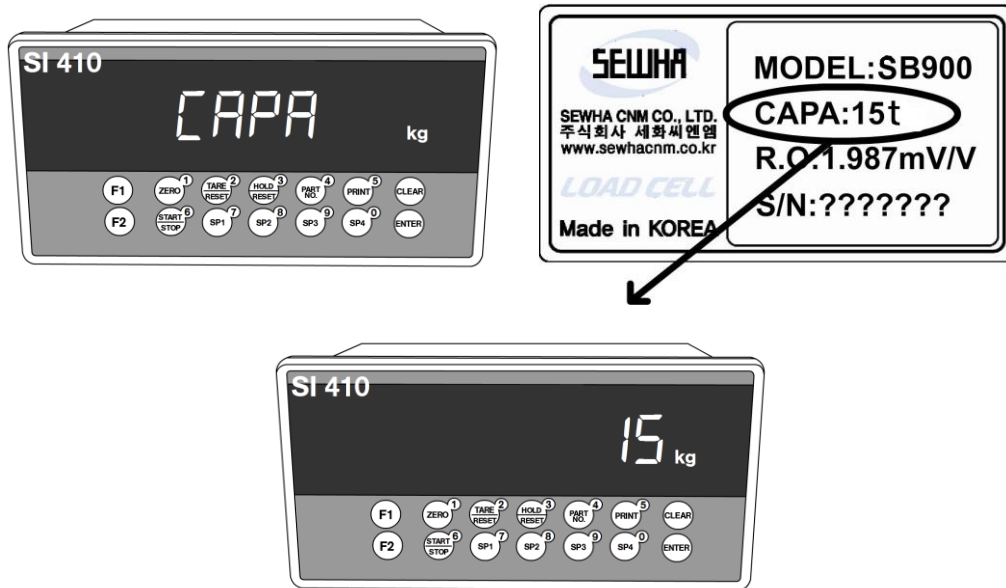
When "CALIBR" is displayed, press  key and select "SCAL".




Press  key to start.

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



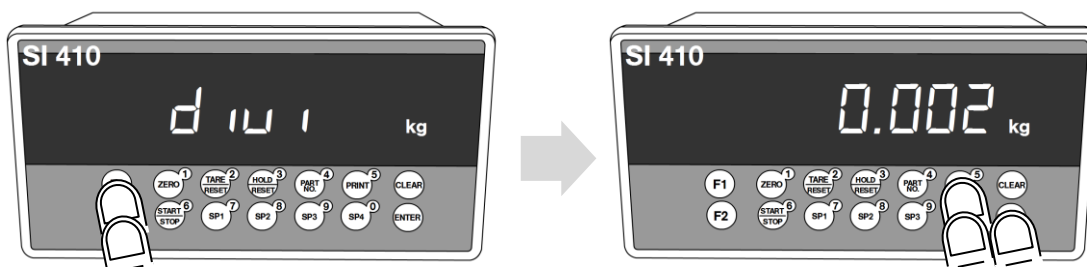
After "CAPA" displayed, Check Max Capacity of Load cell, Input the Max Capacity of Load cell. (refer the load cell label, or Test Report.) And press  key.






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.

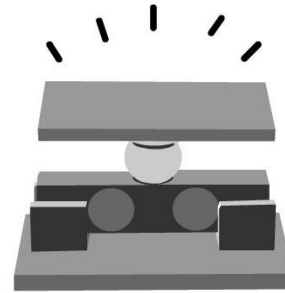
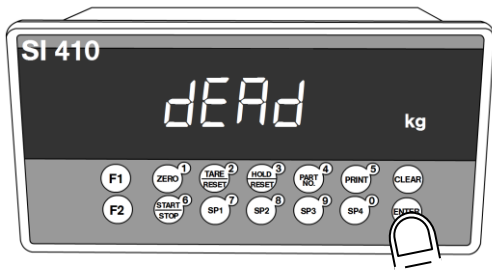
5-2-3. Setting "Digit / Division" value




After "DIVI" is displayed select Decimal point with  and  key, and set the division with  and  key. Press  key to save.

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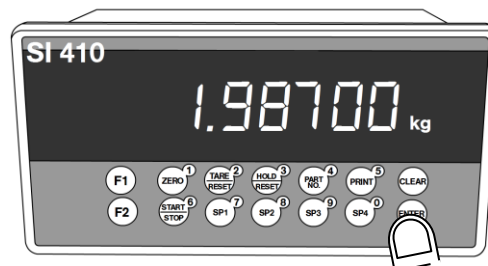
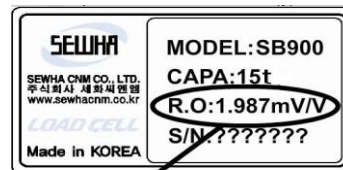
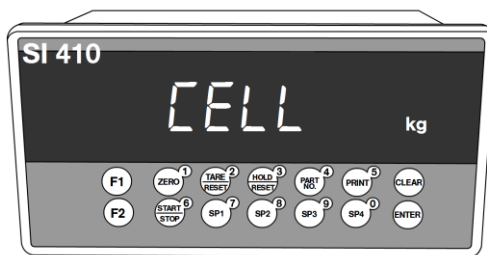
5-2-4. Measuring the "DEAD Weight" of Weighing Scale.




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.)

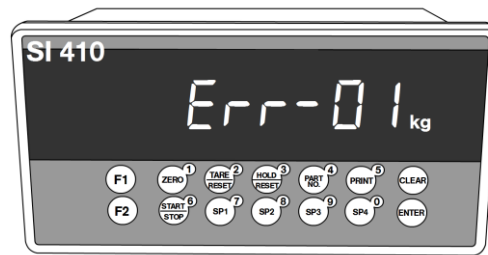
5-2-5. Inputting Max Output (Rated Output Voltage / mV)



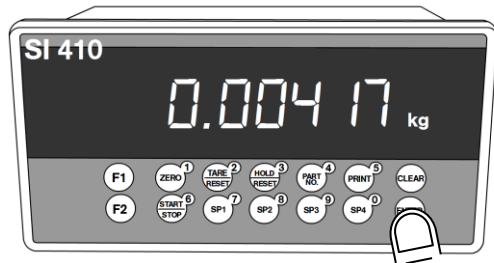
After "mV/V" is displayed, Check the Rated output value of Load cell.

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


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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.



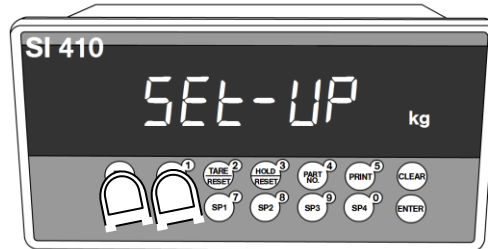
Calculated span value will be displayed. Then

press  key to finish the calibration step.

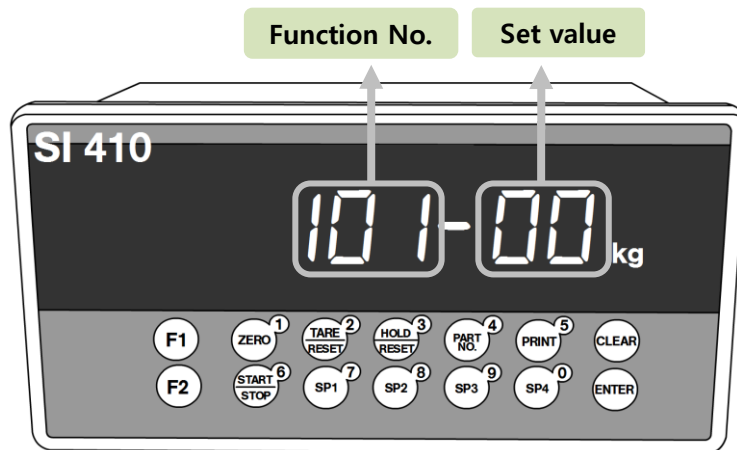
Tip In case of multiple pieces of load cells are connected, the rated output will be same as single load cell's. (Because plural load cells are connected with parallel connection, the sum of rated output voltage is same as single load cell's rated output)
※Due to some variation between "State output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

5-3. F-FUNCTION Setting

5-3-1. Starting F-FUNCTION Mode



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

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5-3-2. F-Function List

F-list	Subject	Default	Contents
101	Equipment No. setting – ID No.setting	01	01~99
102	Weight-Back up Mode	01	00:Normal mode 01: Weight Back up Mode(Zero) 02: Weight Back up Mode(Zero&Tare)
103	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
104	Display Up-Date Speed	09	01:Slow(1time per 1sec) ~ 09:Fast(60times per 1sec)
105	Main display setting	00	00 : Weight 01 : Sub-total weight 02 : Grand-total
108	Buzzer sound (External input detection)	00	00:Buzzer sound, 01:No Buzzer sound
109	Function / Clear key display	00	00 : When press F or Clear key, display on 01 : When press F or Clear key, display off
110	Weight Unit	00	00 : kg 01 : g 02 : ton 03 : % 04 : PCS 05 : OZ 06 : lb
111	Language	00	00:Korean, 01:English
201	EMPTY Range	100	00~999999
202	Auto Zero Range	00	00~99 (Unit:0.25gradation)
203	Steady Range	08	01~99 (Unit:0.25gradation)
204	Steady condition check time	10	01~99 (Unit:0.1sec.)
205	Digital Filter	20	01:Weak vibration ~ 99:Strong vibration
206	Zero key operation mode	00	00:Always active 01:Active under steady condition only

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207	Tare Key operation mode	00	00:Always active 01:Active under steady condition only
208	Tare key Setting	00	00 : Tare Key 01 : Tare Weight
209	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
210	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
211	Auto Zero function under Tare state	00	00:Disuse, 01:Use
212	Tare Delay Time	00	00:Disuse, 01 ~ 10:Use (Unit:1sec.)
213	Auto tare set when weighing starts	00	00:Disuse, 01:Use
214	Tare reset Timing	00	00:Manual, 01:Auto at empty range, 02:Auto at steady condition, 03:Auto when finish relay out is off
215	Auto Tare reset Time	00	00 : Disuse 01 ~ 09 : Use (Unit : 1 sec)
216	Hold Mode	00	00:Sample Hold, 01:Peak Hold, 02:Average Hold
217	Hold Delay Time	00	00:Disuse, 01~10:Use (Unit:1sec.)
218	Hold reset at the near zero	00	00:Disuse, 01:Use
219	Auto Hold reset Time	00	00:Disuse, 01~10:Use (Unit:1sec.)
220	Average Hold Time	10	01 ~ 99 (Unit:0.1sec.)
221	Minus (-) Mark Display	00	00:Use 01:Disuse
222	Under UNPASS/OVERLOAD state, Weight display	00	00:Display, 01:No display

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223	Weighing Mode	01	00 : Disuse 01 : Limit mode 1 02 : Limit mode 2 03 : Checker mode 1 04 : Checker mode 2 05 : Random packer mode 06 : Accumulating mode 1 07 : Accumulating mode 2
224	Relay Control Type	00	00:Minus&Plus weight Control 01: Plus weight Control
225	Relay Output Auto / Manual Setting	00	00:Auto., 01:Manual(User custom)
226	Relay Output 1 Setting	00	00 : Disuse 01: SP1 02 : SP2 03 : SP3 04 : SP4 05: Finish 06 : Zero 07 : Error
227	Relay Output 2 Setting	00	00 : Disuse 01: SP1 02 : SP2 03 : SP3 04 : SP4 05: Finish 06 : Zero 07 : Error
228	Relay Output 3 Setting	00	00 : Disuse 01: SP1 02 : SP2 03 : SP3 04 : SP4 05: Finish 06 : Zero 07 : Error
229	Relay Output 4 Setting	00	00 : Disuse 01: SP1 02 : SP2 03 : SP3 04 : SP4 05: Finish 06 : Zero 07 : Error
230	Relay Output 5 Setting	00	00 : Disuse 01: SP1 02 : SP2 03 : SP3 04 : SP4 05: Finish 06 : Zero 07 : Error
231	Relay Output 6 Setting	00	00 : Disuse 01: SP1 02 : SP2 03 : SP3 04 : SP4 05: Finish 06 : Zero 07 : Error
232	Relay Output 7 Setting	00	00 : Disuse 01: SP1 02 : SP2 03 : SP3 04 : SP4 05: Finish 06 : Zero 07 : Error
233	External Input 1 Setting	01	00 : Disuse 01 : Zero 02 : Tare 03 : Tare reset 04 : Tare/Tare reset 05 : Hold 06 : Hold reset 07 : Hold/Hold reset 08 : Start(Packer mode) 09: Stop(Packer mode) 10: Start/Stop(Packer mode) 11 : Print 12 : Sub-total Print 13 : Grand-total Print 14:Forced discharge
234	External Input 2 Setting	04	00 : Disuse 01 : Zero 02 : Tare 03 : Tare reset 04 : Tare/Tare reset 05 : Hold 06 : Hold reset 07 : Hold/Hold reset 08 : Start(Packer mode) 09: Stop(Packer mode) 10: Start/Stop(Packer mode) 11 : Print 12 : Sub-total Print 13 : Grand-total Print 14:Forced discharge

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235	External Input 3 Setting	07	00 : Disuse 01 : Zero 02 : Tare 03 : Tare reset 04 : Tare/Tare reset 05 : Hold 06 : Hold reset 07 : Hold/Hold reset 08 : Start(Packer mode) 09: Stop(Packer mode) 10: Start/Stop(Packer mode) 11 : Print 12 : Sub-total Print 13 : Grand-total Print 14:Forced discharge
236	External Input 4 Setting	11	00 : Disuse 01 : Zero 02 : Tare 03 : Tare reset 04 : Tare/Tare reset 05 : Hold 06 : Hold reset 07 : Hold/Hold reset 08 : Start(Packer mode) 09: Stop(Packer mode) 10: Start/Stop(Packer mode) 11 : Print 12 : Sub-total Print 13 : Grand-total Print 14:Forced discharge
237	External Input 5 Setting	13	00 : Disuse 01 : Zero 02 : Tare 03 : Tare reset 04 : Tare/Tare reset 05 : Hold 06 : Hold reset 07 : Hold/Hold reset 08 : Start(Packer mode) 09: Stop(Packer mode) 10: Start/Stop(Packer mode) 11 : Print 12 : Sub-total Print 13 : Grand-total Print 14:Forced discharge
238	External Input 6 Setting	14	00 : Disuse 01 : Zero 02 : Tare 03 : Tare reset 04 : Tare/Tare reset 05 : Hold 06 : Hold reset 07 : Hold/Hold reset 08 : Start(Packer mode) 09: Stop(Packer mode) 10: Start/Stop(Packer mode) 11 : Print 12 : Sub-total Print 13 : Grand-total Print 14:Forced discharge
239	Finish Relay Output Delay Time (T1)	10	00 ~ 99 (Unit:0.1sec.)
240	Finish Relay Output Time (T2)	10	00 ~ 99 (Unit:0.1sec.)
241	Weight Judge Delay Time (T3)	10	00 ~ 99 (Unit:0.1sec.) –Checker Mode
243	Weight Judge Time (T4)	10	00 ~ 99 (Unit:0.1sec.) –Checker Mode
249	Forced discharge Time	00	00 ~ 99 (Unit : 0.1sec)
250	Drip control setting	00	00 : Disuse 01 : Use
251	Zero state lamp output standard	00	00 : Near Zero 01 : Zero
253	Near zero output Setting Under tare ON state	00	00:Zero Output 01:Actual zero output except Tare weight
254	Set point save	00	00:Apply to current P/N

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			01:Apply to every P/N
301	Parity / Stop bit	00	00:Databit 8, Stopbit 1, Paritybit Non 01:Databit 8, Stopbit 1, Paritybit Odd 02:Databit 8, Stopbit 1, Paritybit Even 03:Databit 7, Stopbit 1, Paritybit Odd 04:Databit 7, Stopbit 1, Paritybit Even
302	Serial 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: 1115,200bps
303	Data transmission mode	00	00:Simplex / Stream Mode 01:Duplex / Command Mode 02:Print Mode
304	"Check-Sum" under command mode	00	00:Disuse, 01:Use
305	Data Format under Stream Mode	00	00 : Format1 (19byte) 01 : Format 2 (22byte) 02 : Format 3 (17byte) 03 : Format 4 (22byte) 04 : Format 5 (15byte)
306	Date transference under stream mode	00	00:Continuously 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
307	Modbus Transmit Data MSB/LSB location	00	00:Standard, 01:Change
308	Parity / Stop bit (Option Port)	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
309	Serial Communication Speed (Option Port)	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: 1115,200bps

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310	Data transmission mode	00	00:Simplex / Stream Mode 01:Duplex / Command Mode 02:Print Mode
311	"Check-Sum" under command mode (Option Port)	00	00: Disuse, 01: Use
312	Data Format under Stream Mode (Option Port)	00	00:Format1, 01:Format2, 02:Format3 03:Format4 04:Format5
313	Date transference under stream mode (Option Port)	00	00:Continuously 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
316	Date transference under Ethernet (Option Port)	00	00:Simplex / Stream Mode 01:Duplex / Command Mode 02 :Modbus (RTU)
317	"Check-Sum" under Ethernet (Option Port)	00	00: Disuse, 01: Use
318	Data Format under Ethernet Stream Mode Ethernet (Option Port)	00	00 : Format1 (19byte) 01 : Format 2 (22byte) 02 : Format 3 (17byte) 03 : Format 4 (22byte) 05 : Format 5 (15byte)
319	Date transference under Ethernet stream mode (Option Port)	00	00:Continuously 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
352	Print Format Setting	00	00: Continuous Print, 01: Single Print
354	Print Output Delay Time Setting	00	00~09 (Unit:1sec.)
355	Paper Withdraw Rate setting (After Continuous/Single Print)	00	00~09 (Unit:1line add)
356	Paper Withdraw Rate setting (After SUB/Grand-total Print)	00	00~09 (Unit:1line add)
357	Sub-total date delete after printing	00	00 : No delete 01 : Delete

SI 410 WEIGHING INDICATOR

358	Grand-total date delete after printing	00	00 : No delete 01 : Delete
401	Analog Output Applying Weight Range	00	00: Absolute number(-&+) 01: Positive number(only +)
402	Analog Output Direction	00	00: Forward 01:Reverse
403	Analog Output Standard	00	00: CAPACITY, 01:SP1 02: SP2, 03:SP3, 04:SP4 05: CAPACITY(Gross weight under Tare)
404	BIN IN (Product number change)	00	00 : Disuse 01 : Units digit, tenth digit separation 02 : Units digit, tenth digit No separation
405	IP setting 1		0~255
406	IP setting 2		0~255
407	IP setting 3		0~255
408	IP setting 4		0~255
409	Subnet mask setting 1		0~255
410	Subnet mask setting 2		0~255
411	Subnet mask setting 3		0~255
412	Subnet mask setting 4		0~255
413	Gateway setting 1		0~255
414	Gateway setting 2		0~255
415	Gateway setting 3		0~255
416	Gateway setting 4		0~255
417	Port setting		0~65000

SI 410 WEIGHING INDICATOR

◆ Weighing Data Saving time point and print


Weighing Data Save Method (F-function 103)		Print input (Key, Communication, External input)	Printing out data	Saving Data
00	Manual	○	Current weight	Current weight
		X	X	X
01	Auto: At every steady states	○	Recent stable weight	X
		X	Steady weight	Steady weight
02	Auto: At the first steady states	○	Recent stable weight	X
		X	Steady weight	Steady weight
03	Manual& Auto: At every steady states	○	Recent finish weight	X
		X	Finish weight	Finish weight
04	Manual& Auto: At the first steady states	○	Current weight	Current weight
		X	Steady weight	Steady weight
05	Manual / Auto : When weighing is finished	○	Current weight	Current weight
		X	Steady weight	Steady weight
06	Manual	○	Current weight	Current weight
		X	Finish weight	Finish weight

SI 410 WEIGHING INDICATOR



5-3-4. Hidden Function

How to enter Hidden function setting mode : Press  key 4 times and input your password.

Default password is  (0410).

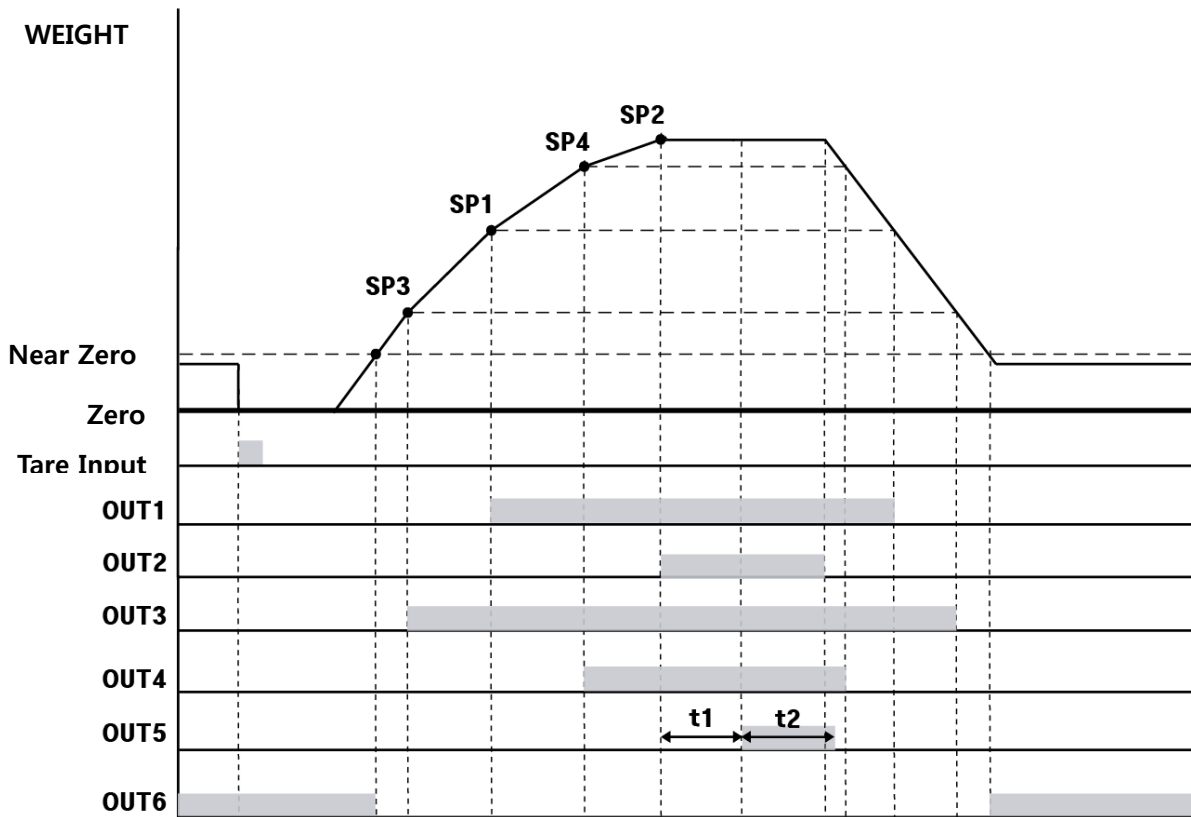
Serial Number Check			
HF01	Check your device's serial number		
Operation time check			
HF02	Check how long hours it has been operated. (Power ON) Unit : 1hour		
S/W Version Check			
HF03	Check the currently applied program version.		
H/W Version Check			
HF04	Check the currently applied hardware version.		
DATE(Y,M,D) Check / Modification			
HF05	Check the date or adjust when it is wrong.		
TIME(H,M,S) Check / Modification (24Hours)			
HF06	Check the time or adjust when it is wrong.		
Password Setting (4digit)			
HF07	Password is required when you enter to hidden function. Enter the password twice.		
			
	Password combination within 0~9.		
Maximum Capacity Weight Check			
HF08	Check the max capacity which is set under calibration mode.		
Division Check			
HF09	Check the division which is set under calibration mode.		
Test weight Check			
HF10	Check the weight of test weight which is used for your last calibration.		
Analog value of ZERO			
HF11	Check the analog value of ZERO.		
Analog Output Use Setting			
HF13	<input checked="" type="radio"/>	00	4-20mA out
	<input type="radio"/>	01	0-10V out

SI 410 WEIGHING INDICATOR

Minimum Analog Output Setting	
HF14	Minimum analog output can be adjusted.  key for – value setting. Input range : -20 ~ +20 , Default : 0
Maximum Analog Output Setting	
HF15	Maximum analog output can be adjusted.  key for – value setting. Input range : -20 ~ +20 , Default : 0
Function List Factory Reset	
HF16	Change to default F-setting

SI 410 WEIGHING INDICATOR

◆Weighing mode 1. – Limit mode (A Dry contact) -User's choice relay output 2 (Function 223-01) - relay output order is selectable by user



Time

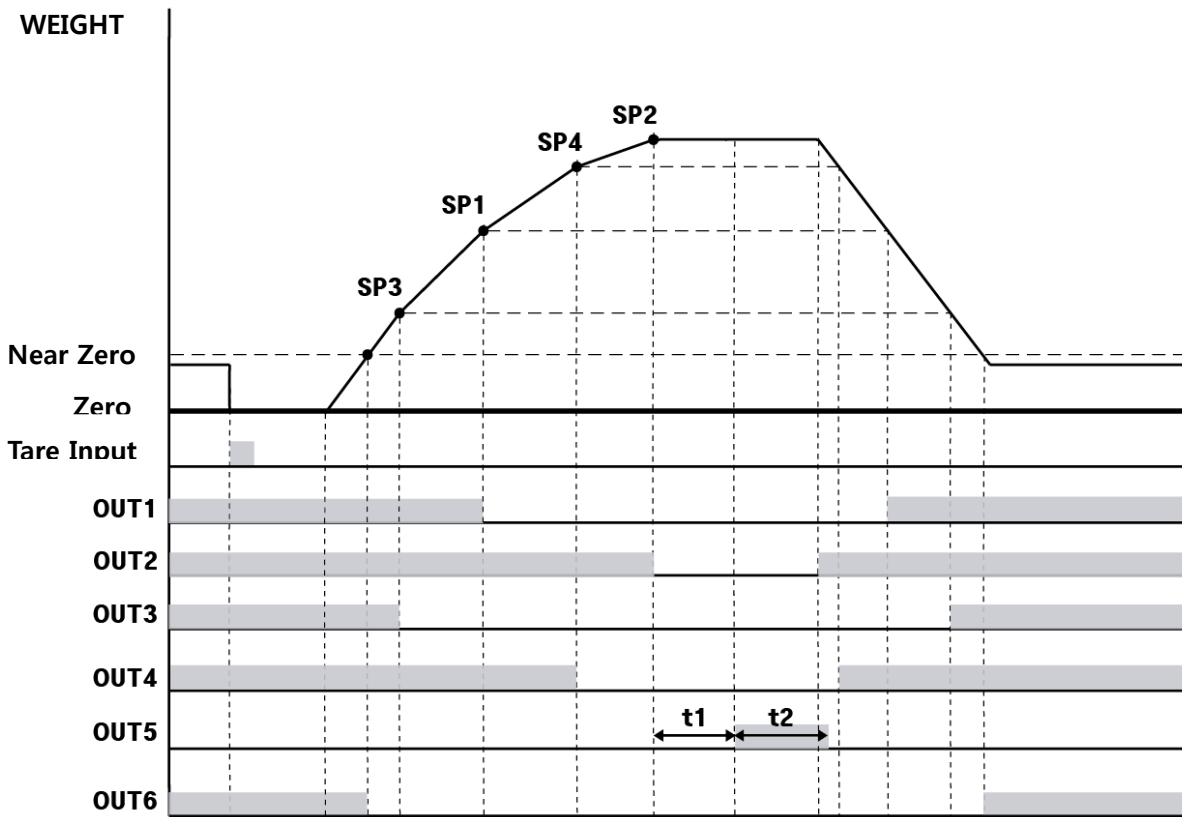
Time	Contents
t1	Finish Relay Output Delay Time (Function 239) When Function 103-3 or 103-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 240)

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 201) (ON)

SI 410 WEIGHING INDICATOR

◆Weighing mode 2. – Limit mode 6 (B Dry contact) - User's choice relay output 1
(Function 223-02) - relay output order is selectable by user



Time

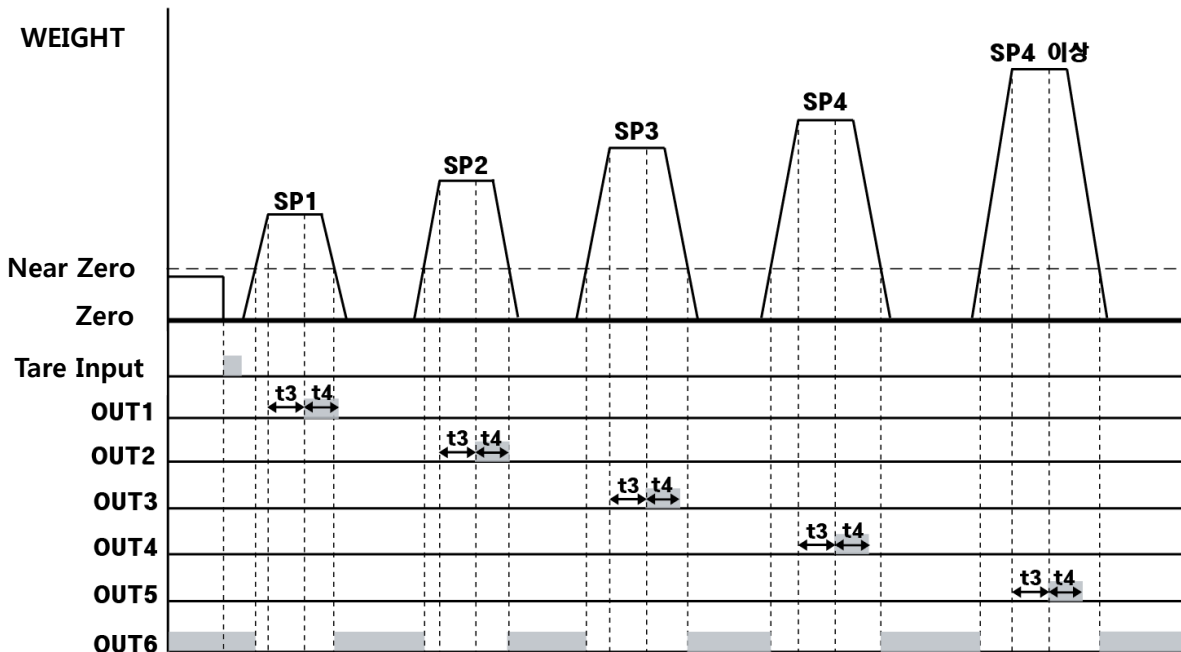
Time	Contents
t1	Finish Relay Output Delay Time (Function 239) When Function 103-3 or 103-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 240)

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 201) (ON)

SI 410 WEIGHING INDICATOR

◆Weighing mode 3. - Checker mode 1. (223-03) – Simple comparison mode 1.



Time

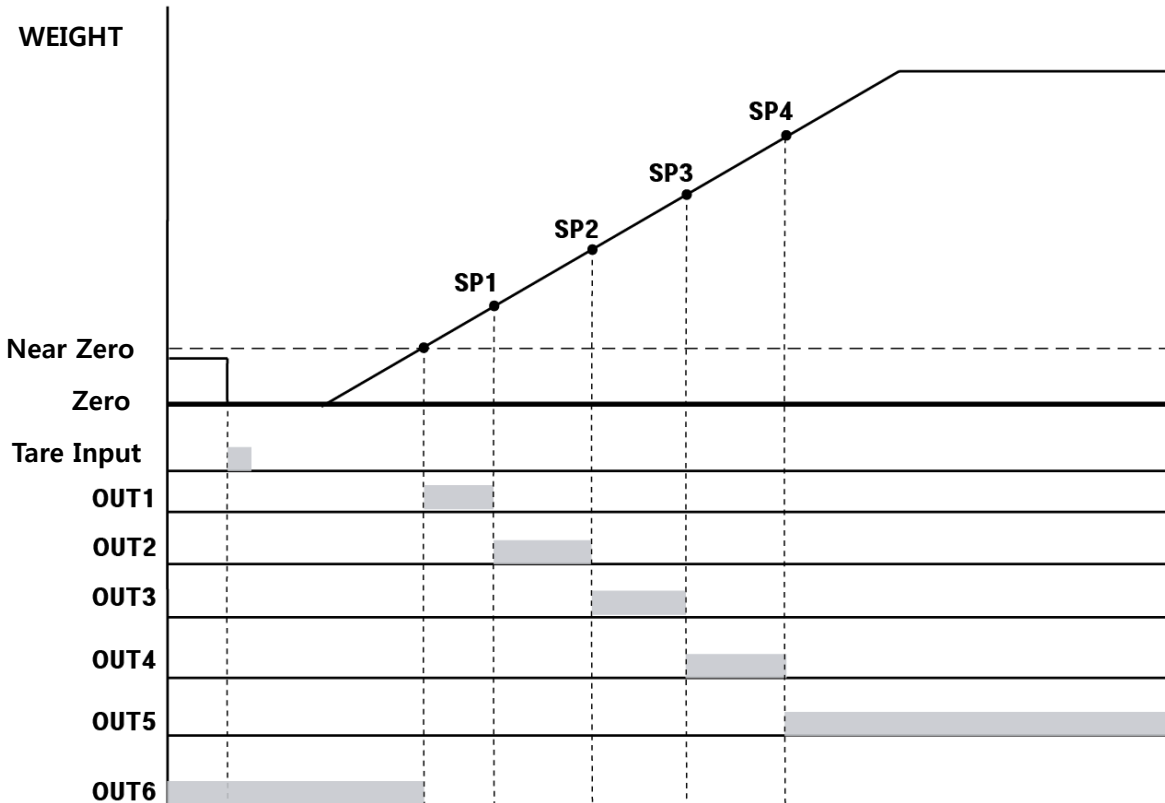
Time	Contents
t3	Weight Judge Delay Time (Function 241) Save weight date after t3, under Function 103-3 or 103-6 t3.
t4	Weight Judge Time (Function 243)

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 201) (ON)

SI 410 WEIGHING INDICATOR

◆Weighing mode 4. - Checker mode 2. (223-04) - Simple comparison mode 2.



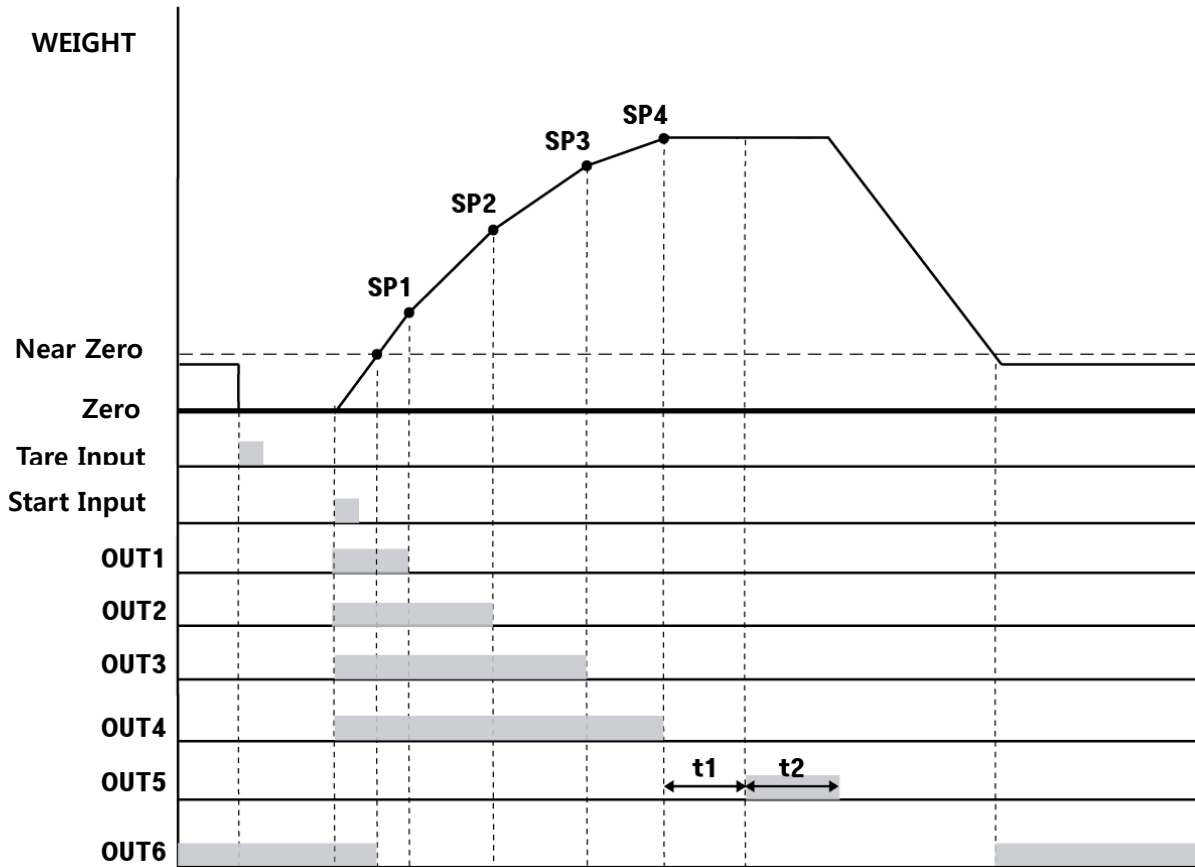
Relay output

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 201) (ON)
OUT 3	SP2 < Current weight ≤ SP3 (ON)	OUT 7	Cell-Error (ON)
OUT 4	SP3 < Current weight ≤ SP4 (ON)		

※No Accumulation.

SI 410 WEIGHING INDICATOR

◆Weighing mode 5. – Random Packer mode (223-05)



Time

Time	Contents
t1	Finish Relay Output Delay Time (Function 239) When Function 103-3 or 103-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 240)

Relay output

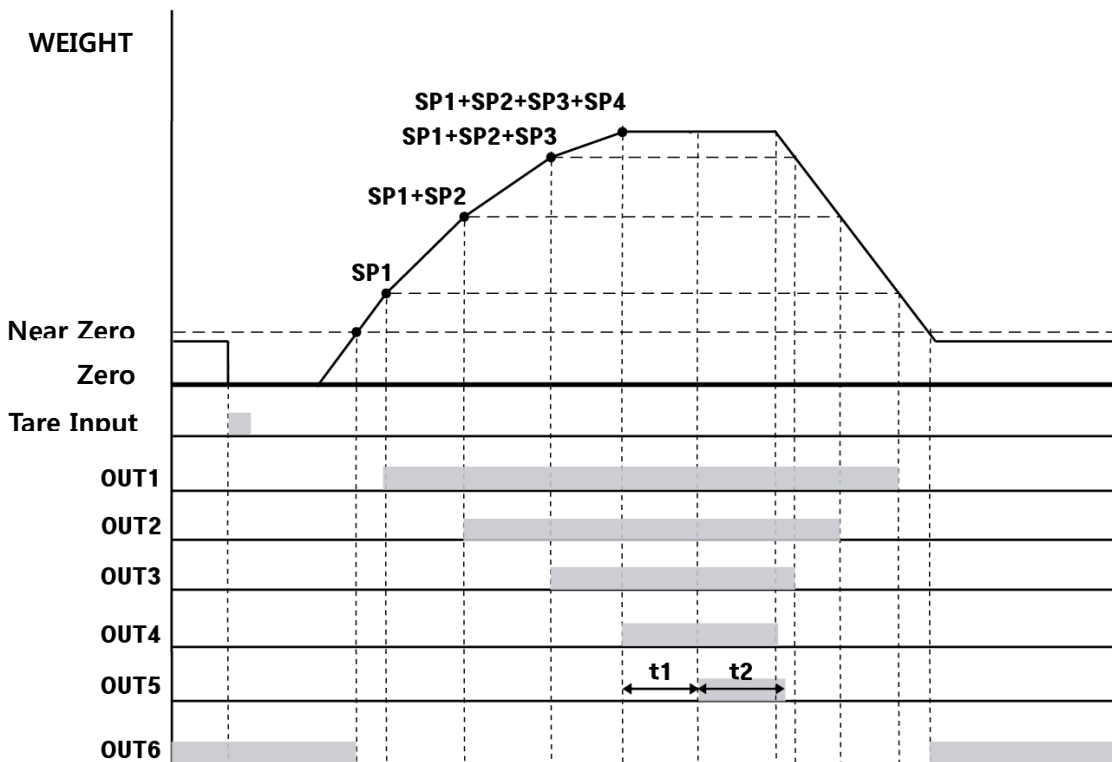
Relay	Condition	Relay	Condition
OUT 1	Start On (ON) Current weight \geq SP1 (OFF)	OUT 4	Start On (ON) Current weight \geq SP4 (OFF)
OUT 2	Start On (ON) Current weight (OFF)	OUT 5	After SP4 After t1 set time During t2 set time (ON)
OUT 3	Start On (ON) Current weight \geq SP3 (OFF)	OUT 6	Within near zero range (Function 201) (ON)

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

SI 410 WEIGHING INDICATOR

◆Weighing mode 6. – Accumulation mode 1. (223-06)

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



Time

Time	Contents
t1	Finish Relay Output Delay Time (Function 239) When Function 103-3 or 103-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 240)

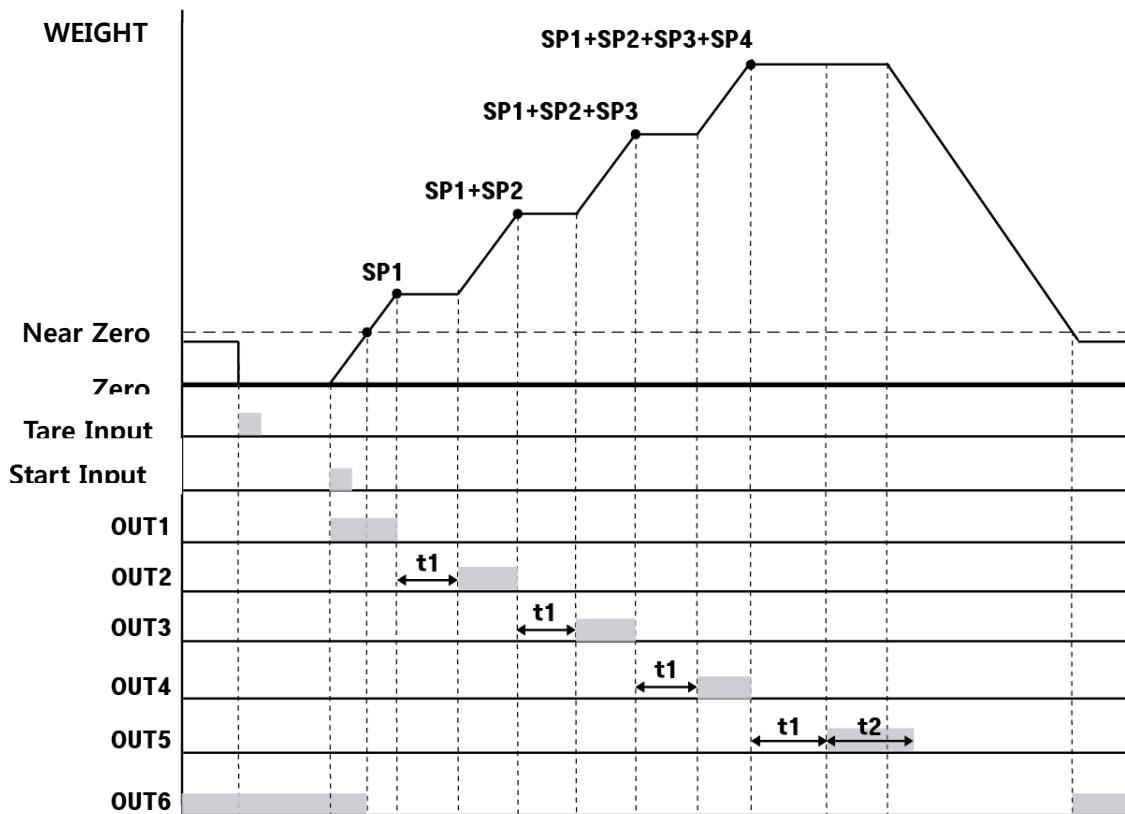
Relay output

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 이후 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 201) (ON)

SI 410 WEIGHING INDICATOR

◆Weighing mode 7 - Accumulation mode 2. (223-07)

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



Time

Time	Contents
t1	Finish Relay Output Delay Time (Function 239) When Function 103-3 or 103-6, save the date after t1 time.
t2	Finish Relay Output Time (Function 240)




























Relay output

Relay	Condition	Relay	Condition
OUT 1	Start input (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 $SP1+SP2+SP3+SP4$ 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 201) (ON)

5-4. Test Mode



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

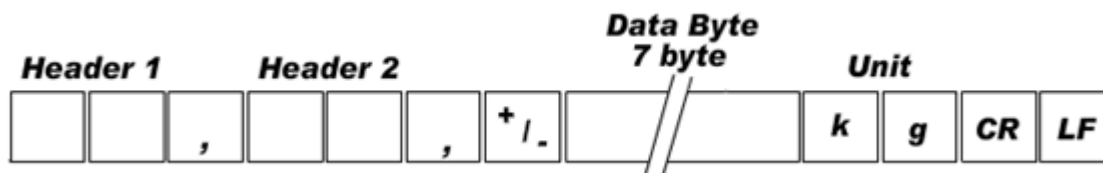
Test Mode	Analog Value	Press  key 4times →  → 
	Analog Variation Value	Press  key 4times →  → 
	Key	Press  key 4times →  → 
	Display	Press  key 4times →  → 
	External Input	Press  key 4times →  → 
	Relay Output	Press  key 4times →  → 
	Analog out	Press  key 4times →  → 
	Standard serial I/F	Press  key 4times →  → 
	Option serial I/F	Press  key 4times →  → 

6. INTERFACE

6-1. Serial Interface

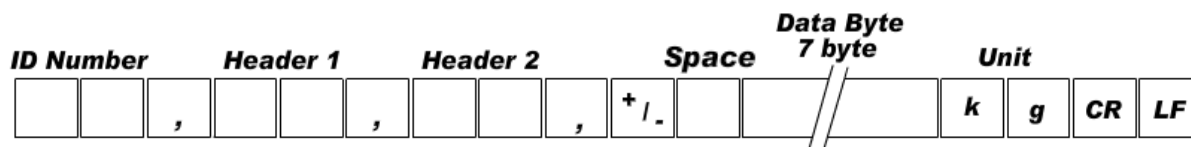
6-1-1. Data Format

(1) Data Format 1 : ID Number is not be transferred. (Refer F-function 305-00) -19byte



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

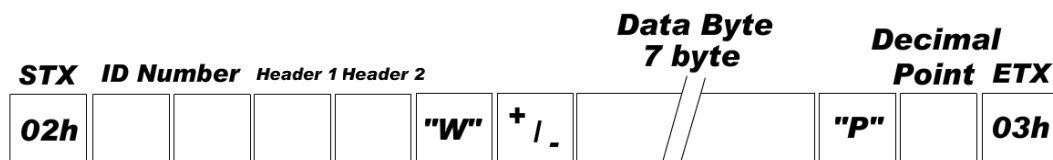
(2) Data Format 2 : ID Number+Data Transference (Refer F-function 101, 305-01) -22byte



ID Number : Function 101

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 + State (Refer function 305-02) – 17 byte

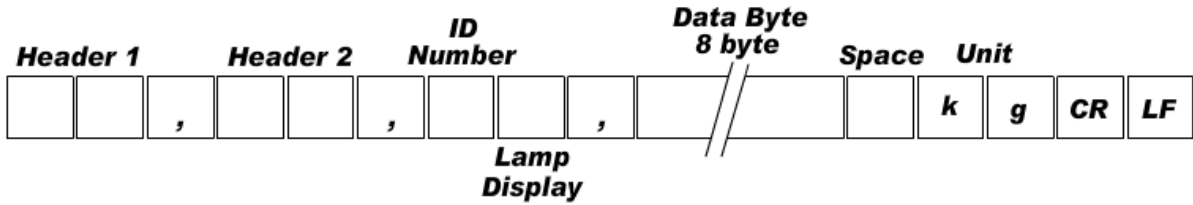


ID Number : Function 101

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

SI 410 WEIGHING INDICATOR

(4) Format 4 (ID Number, Function 101, 305-03) – 22 byte



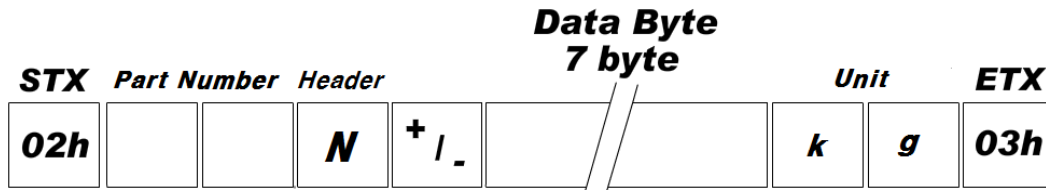
ID Number : Function 101

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

램프 표시 설명

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) Format 5 (P/N, Judgement weight, Weight transmission, 305-04) : For checker mode-15byte



SI 410 WEIGHING INDICATOR

6-1-2. 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 (Function 304 - 01 or 311 - 01)			
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		

6-1-3. Read Command

Subject	Command	Length of transmission data	
		Under the function 305/312 - 00,01,03,04	Under the function 305/312 - 02
Current Weight	STX ID RCWT ETX	22 byte	22 byte
Current data	STX ID RCWD ETX	44 byte	48 byte
Sub-total date	STX ID RSUB ETX	29 byte	30 byte
Sub-total weighing times	STX ID RSNO ETX	14 byte	14 byte
Grand-total data	STX ID RGRD ETX	29 byte	28 byte
Weighing completion value	STX ID RFIN ETX	15 byte	18 byte
Current time data	STX ID RTIM ETX	14 byte	
Current date data	STX ID RDAT ETX	14 byte	
Tare weight	STX ID RTAR ETX	15 byte	18 byte
SP1	STX ID RSP1 ETX	15 byte	17 byte
SP2	STX ID RSP2 ETX	15 byte	17 byte
SP3	STX ID RSP3 ETX	15 byte	17 byte
SP4	STX ID RSP4 ETX	15 byte	17 byte
SP1, SP2, SP3, SP4	STX ID RSPA ETX	-	38 byte
Current P/N transmission	STX ID RPNO ETX	10 byte	
Current weight, Input, Output state	STX ID RWRS ETX	29 byte	31 byte

SI 410 WEIGHING INDICATOR

6-1-4. Write Command

Subject	Command	Length of transmission data)	
		Under the function 305/312 - 00,01,03,04	Under the function 305/312 - 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	STX ID WSP1 SP1 value ETX	15 byte	15 byte
SP2	STX ID WSP2 SP2 value ETX	15 byte	15 byte
SP3	STX ID WSP3 SP3 value ETX	15 byte	15 byte
SP4	STX ID WSP4 SP4 value ETX	15 byte	15 byte
P/N change	STX ID WPNO P/N ETX	10 byte	
SP1, SP2, SP3, SP4	STX ID WSPA SP1, SP2, SP3, SP4 value ETX	-	36 byte
P/N, SP1, SP2, SP3, SP4	STX ID WFTD P/N SP1, SP2, SP3, SP4 value ETX	-	38 byte

6-1-5. Modbus Memory Map

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.

Add-ress	Leng-th	Featur-e	Description
1	2	RO	Capacity
3	2	RO	None(0x00)
5	2	RO	Analog Value
7	2	RO	Span Value
9	1	RO	Division
10	1	RO	Decimal point
11	2	RO	Current Weight
13	2	RO	Tare Weight
15	2	RO	Measured Weight
17	2	RO	Digital input
19	2	RO	Lamp
21	2	RO	Error
23	1	RO	Weighing Mode
24	1	RO	Weighing Step
25	2	RO	Current P/N Sub-total count

27	2	RO	Current P/N Sub-total Weight
33	2	RO	Grand-total Count
35	2	RO	Grand-total Weight
437	2	RW	Date
439	2	RW	Time
441	1	RW	Key value
443	1	RW	Relay output
444	1	RW	P/N
445	2	RW	Current P/N Set point 1
447	2	RW	Current P/N Set point 2
449	2	RW	Current P/N Set point 3
451	2	RW	Current P/N Set point 4

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6-1-6. Modbus memory register

(1) Digital input register (Address : 17, Length : 2)

0	1	2	3
INPUT1	INPUT2	INPUT3	INPUT4

(2) Lamp register (Address : 19, Length : 2)

0	1	2	3	4	5	6	7
Steady	Zero	Tare	OUT1	OUT2	OUT3	OUT4	Hold

(3) Error register (Address : 21, Length : 2)

0	1	2
Loadcell Error	Over Load	Set point Error

(4) Key register (Address : 441, Length : 1)

0	1	2	3	4	5	6	7	8	9	10	11
Start	Stop	Zero	Tare	Tare Removal	Hold	Hold Removal	Print	Sub- total print	Sub- total delete	Grand -total Print	Grand- total delete

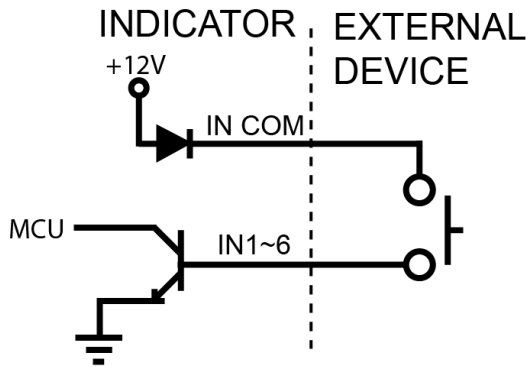
(5) Relay output register (Address : 443, Length : 1)

0	1	2	3	4	5	6
OUT1	OUT2	OUT3	OUT4	OUT5	OUT6	OUT7

6-2. External input

Each external input's function is selectable from function 233~238.

6-2-1. External input circuit composition



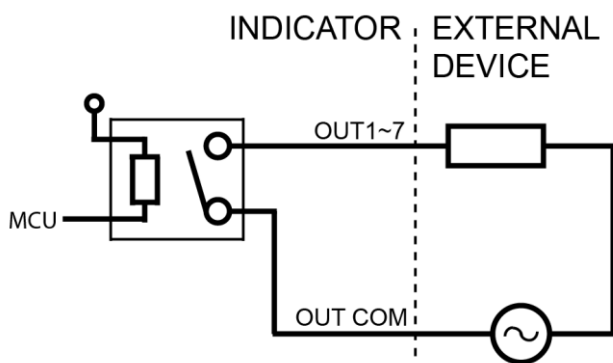
6-3. Relay output

7pcs relay out A dry : Each relay output's function is selectable from function 226~232.

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.



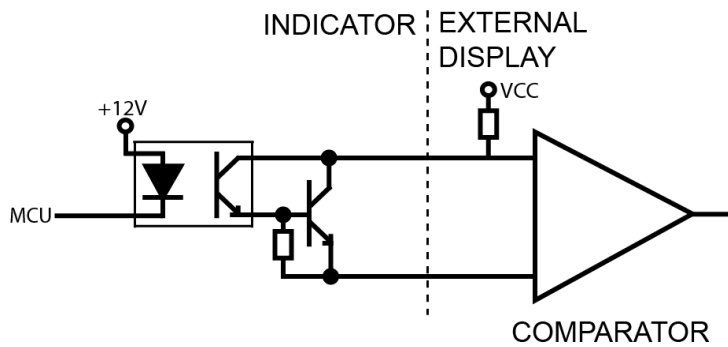
If you use higher voltage than relay specification, indicator might be damaged.

6-4. Current loop

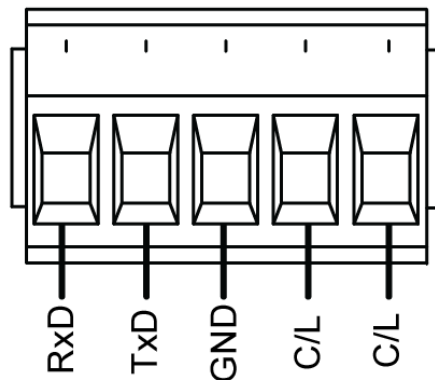
Current loop is suitable for middle distance transmission because stronger than RS-232C against electric noise. (About 100M)

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 ~ 22mA	1/5,000	0.01%°C	500Ω MAX.

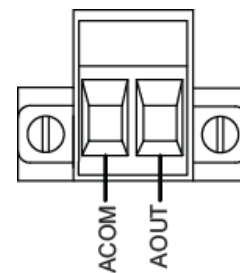
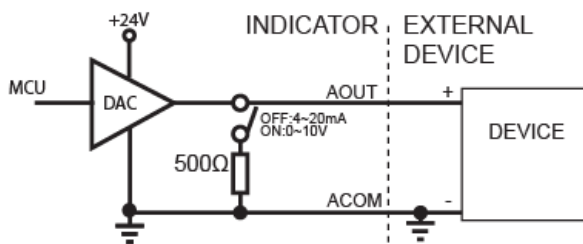
Under Calibration mode or "CELL-ERR" condition, Analogue output will not activated.

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.

6-5-1. 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 "F-function HF14 Minimum Analog Output Setting" mode.

Step3) Adjust the displaying value of indicator with keys(by 9,999) to make Digital multi meter's value as minimum(ex:4mA) and save.(When the SI 460C indicate about 5,200 , the Digital multi meter indicates about 4mA)

Step4) Enter "F-function HF15 Maximum Analog Output Setting" mode

Step5) after connect digital multi meter to the indicator, then adjust the displaying value of indicator with keys (by 32,768) to make Digital multi meter's value as maximum (ex:20mA).

※ **This D/A Converter has Max 1/5,000 accuracy, so this output is not suitable for high accuracy application, more than 1/5,000.**

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

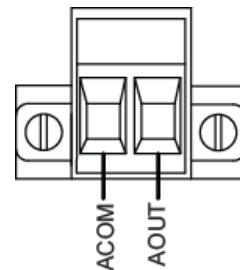
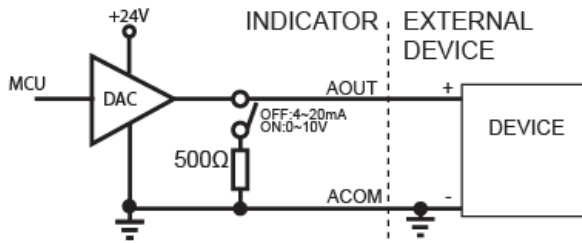
Under Calibration mode or "CELL-ERR" condition, Analogue output will not activated.

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.



ACOM	AOUT
-	+

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 "F-function HF14 Minimum Analog Output Setting" mode.

Step3) Adjust the displaying value of indicator with keys(by 9,999) 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 HF15 Maximum Analog Output Setting" mode

Step5) after connect digital multi meter to the indicator, then adjust the displaying value of indicator with keys (by 32,768) to make Digital multi meter's value as maximum (ex:10V).

※ This D/A Converter has Max 1/5,000 accuracy, so this output is not suitable for high accuracy application, more than 1/5,000.

6-7. Analog output selection

- (1) On the option board, there is switch for analog output selection 4-20mA or 0-10V.
- (2) "HF13 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.

6-8-2. English Format

```

=====
DATE :      2009-05-10
TIME :      18:00:10
COUNT      WEIGHT
  1          + 1.330kg
  2          + 5.350kg
  3          + 1.380kg
  4          + 2.330kg
    
```

Continuous Print Format(Function 352-00)

```

=====
DATE :      2009-05-10
TIME :      18:00:10
COUNT      WEIGHT
  2          + 5.350kg
=====
DATE :      2009-05-10
TIME :      18:00:10
COUNT      WEIGHT
  3          + 1.280kg
    
```

Single Print Format(Function 352-01)

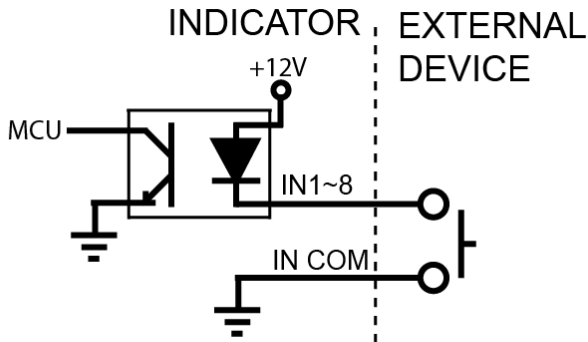
```

=====
                        TOTAL
DATE :      2009-05-10
TIME :      18:00:10
COUNT :      10
TOTAL WEIGHT : 258.145kg
=====
                        TOTAL DELETE
=====
    
```

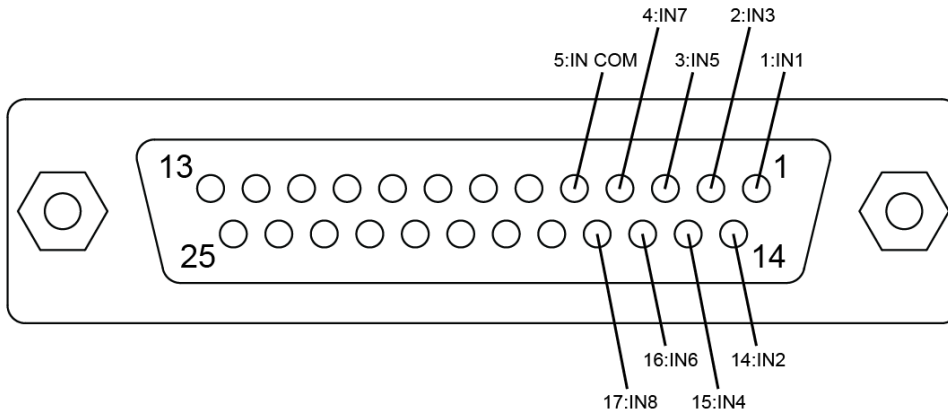
Grand-total Print

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

6-9-1. BIN IN card circuit composition



6-9-2. BIN IN card connection

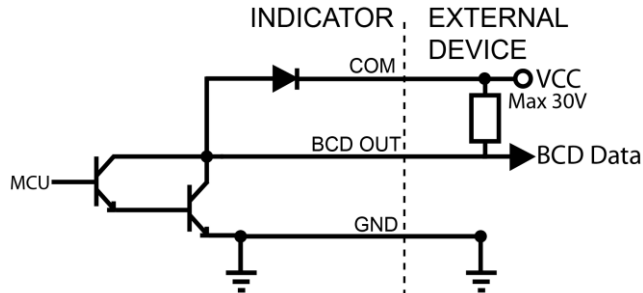


PIN No.	1	14	2	15	3	16	4	17	5
Role	IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN COM
Function 404-00	1	2	4	8	10	20	40	-	-
Function 404-01	1	2	4	8	16	-	-	-	-

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6-10. BCD OUT Card (Weight data out) (Function 316-00)

6-10-1. Circuit composition



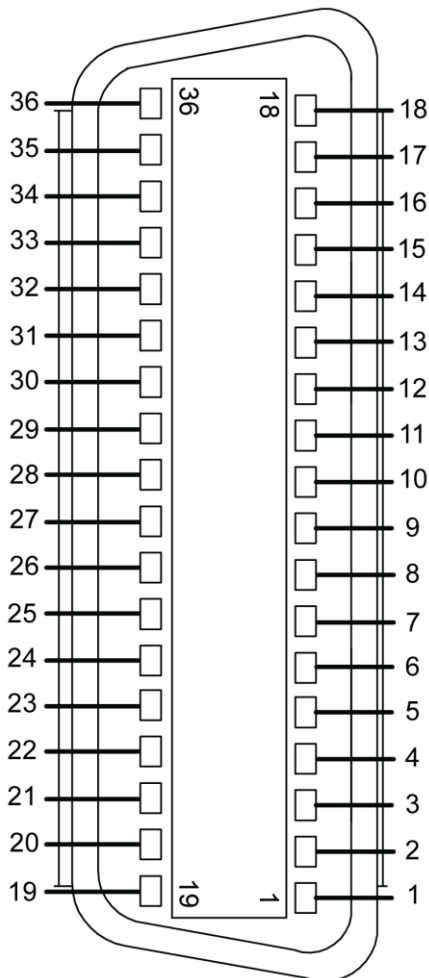
6-10-2. Card switch setting

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

6-10-3. BCD OUT card specification

MAX Input Voltage	30V 500mA
-------------------	-----------

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	Total weight (LOW)	31
2X100	6	GND	1, 14
4X100	24	Disuse	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	Disuse	35
1X10000	27	Disuse	18
2X10000	10	Overload	36

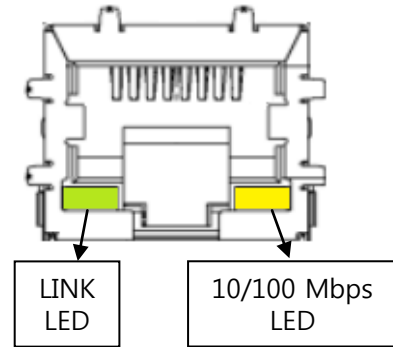
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6-11. Ethernet card

Using this Ethernet communication, indicator and other external devices can be communicate (10/100Mbps.)Function 405~417)

Depending on your selection from function 310 (Stream mode or command mode), this function is rely on function 311~313.

Function 310-00 (Stream mode)	312-00, 01, 02, 03, 04
	313-00, 01, 02, 03
Function 310-01 (Command mode)	311-00, 01



6-12. SD memory card

Weighing data will be saved to SD memory card depends on your function 103.

6-12-1. Saving format (File name: YYMMDD.CSV (Ex: 140728.CSV))

DATE	TIME	ID	PART	SERIAL	WEIGHT	UNIT
2014-07-18	12:18:04	1	50	22	301.4	kg
2014-07-18	12:18:10	1	50	23	301.4	kg
2014-07-18	12:18:10	1	50	24	301.4	kg

6-12-2. Grand-total weight format (파일명: 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	SERIAL	WEIGHT	UNIT
1	1	5	1207.4	Kg
1	2	8	2383.4	Kg
1	3	2	506.6	Kg
1	4	2	524.6	Kg

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6-12-3. 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	

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7-2. Calibration Process

Display	Cause	Treatment
Eerr01	When Max capacity/digit value is over 20,000	Re-input the Max Capacity, less than 20.00 (Max Capacity / Digit)
Eerr04	Standard weight value is over than Max Capacity	Re-input Standard weight value with Number keys, under Max Capacity
Eerr05	Standard weight value is less than 10% of Max Capacity	Re-input Standard weight value with Number keys, more than 10% of Max Capacity
Eerr06	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)
Eerr07	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)
Eerr08	Under "F-function" model, set value is "N.A"	Check the correct value and re-input
err-a	When there is continuous vibration on the weighing part,, indicator cannot process calibration any more.	<ul style="list-style-type: none"> - Find vibration cause and remove - Load cell check - Load cell cable and connecting condition check

7-3. Digital Weighing Indicator

Display	Cause	Treatment
<p>"CELL-Err"</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"	<p>When Power is on, "SET" displays.</p> <p>It means EEPROM has some problem.</p>	<p>Please contact the distributor or Head Office.</p>
"HALt"	H/W has some problem.	
"t-Err"	The dead Battery	

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※ Under “**Cell-er**”, Zero key, Tare key, Hold key and print key will not be activated.

WARRANTEE CERTIFICATION	
<p>This product is passed “Sewhacnm’s strict quality test.</p> <p>If there is defect of manufacturing or abnormal detection within warrantee period, please contact our Agent or Distributor with this Warrantee certificate.</p> <p>Then, we will repair or replace free of charge.</p>	
WARRANTEE CLAUSE	
<p>1. The Warrantee period, we can guarantee, is one(1) year from your purchasing date</p> <p>2. Warrantee Exception Clause</p> <ul style="list-style-type: none"> - 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”. <p>3. Other</p> <ul style="list-style-type: none"> - Any kinds of “Warrantee Certification” without authorized Stamp is out of validity 	
<p>SEWHACNM Co.,Ltd.</p> <p>#504, 302Dong, 397, Seokcheon-ro, Ojeong-gu, Bucheon-si, Gyeonggi-do, Korea</p> <p>Made in KOREA</p> <p>Website : http://www.sewhacnm.co.kr ,</p> <p>Email : sales@sewhacnm.co.kr</p>	<p>Product</p> <p>Digital Weighing Indicator</p>
	<p>Model</p> <p>SI 410</p>
	<p>Serial No.</p>
	<p>AUTHORIZED STAMP</p> 