

CE

Approved for Digital
Weigh Indicator

Digital Weighing Indicator

SI 400

User Manual



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 **SEWHACNM**
주식회사 세화씨엔엠

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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 SI 400 Industrial Digital Weighing Indicator.

This "SI 400" model is high-control performance weighing Indicator for packer.

This "SI 400" model has various external interface: Serial Communication(Modbus available), Analog Output and 232c Communication, BCD In/Out to select option for user convince and environment.

Please review and learn this instruction Manual and enjoy your process efficiency with "SI 400" 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 400 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 Card (More options in addition to basic option)

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	RS232C & C/L 1Port	Data Transference, Command Mode, Serial Printer Mode, Modbus(RTU)	
Power	AC : 110~240V, Maximum Power Consumption 14W		
Size	200mm(W) x 100mm(H) x 126.5mm(D)	Weight : 1,230g	















3-2. Option

Option1	Serial Interface(RS-422)
Option2	Serial Interface(RS-485)
Option3	Serial Interface(RS-232)
Option4	ETHERNET CARD
Option5	Analog Output(4~20mA)
Option6	Analog Output(0~10V)
Option7	BCD OUT
Option8	BIN IN
Option9	SD Memory card






















3-3. State LED Lamp

CONDITION MARK	CONTENT
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.
IN1	When external input 1 terminal is input, ON..
IN2	When external input 2 terminal is input, ON..
IN3	When external input 3 terminal is input, ON..
IN4	When external input 4 terminal is input, ON..
IN5	When external input 5 terminal is input, ON..
IN6	When external input 6 terminal is input, 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

3-4. 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 - Number 2
	- Set the TARE Reset - number 3
	- Set the "HOLD" Function - number 4
	- When "HOLD" function is set, HOLD Reset - number 5
	- Product No Setting - number 6
	- Display the weighing count of current P/N. (5sec) - number 7
	- Display sub-total weight of current P/N. (5sec) - number 8
	- Display Grand-total weight. (5sec) - number 9
	- Print out - Number 0
	- Cancel or Move to previous step.
	- Save and Move to next step.

3-5. Key Combination

			Double tare setting (Once tare is set, Another tare is overlapped.)
			Display the current weight during 5 sec.
			Print the Sub-total out
			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

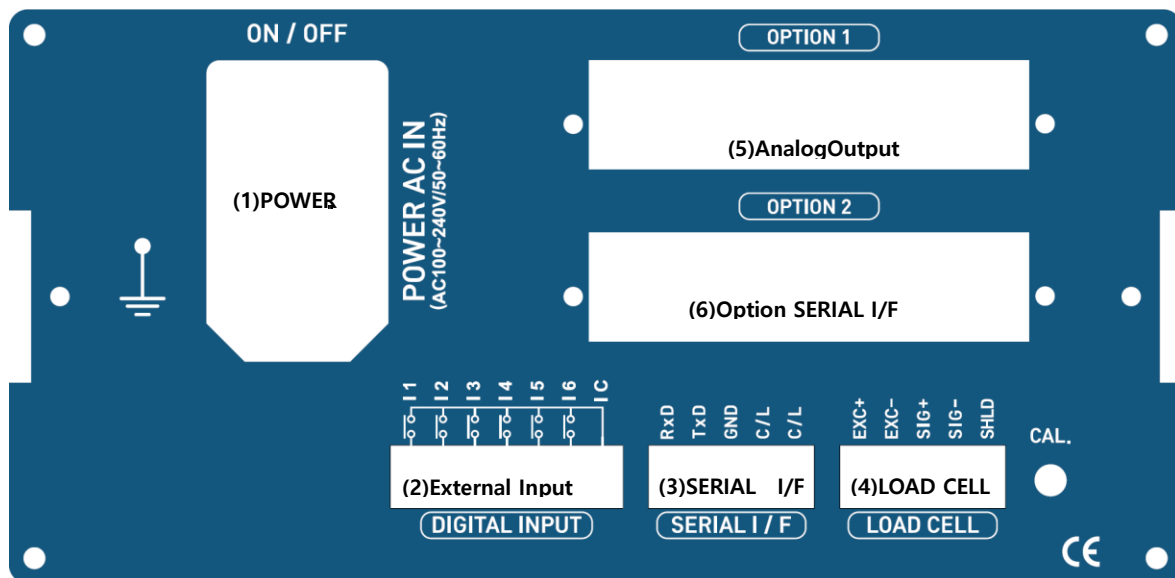
Max accumulated weighing count : 999,999times

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)

3-6. Real Panel



- (1) AC Power input terminal
- (2) External input terminal: User selectable 6EA
- (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
Load cell	EXC+	EXC-	SIG+	SIG-	SHEILD

- (5) Analogue Output terminal

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

- (6) 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

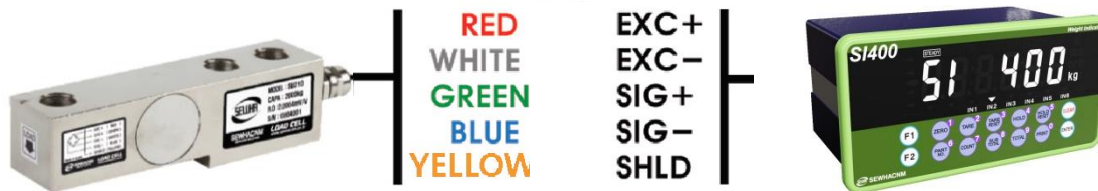


Please check the Comm. and other specification in the label, attached on the cover plate first, and make connection according to that information.

4-3 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.

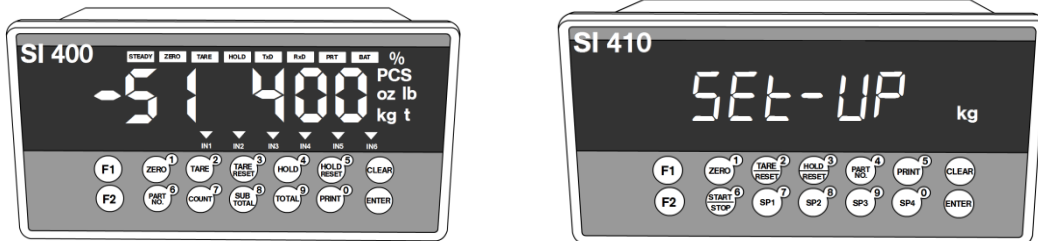
■ Load Cell Installation

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 upper 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 →  → 
	Analog out	Press  key for 4 times →  → 

*  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.)

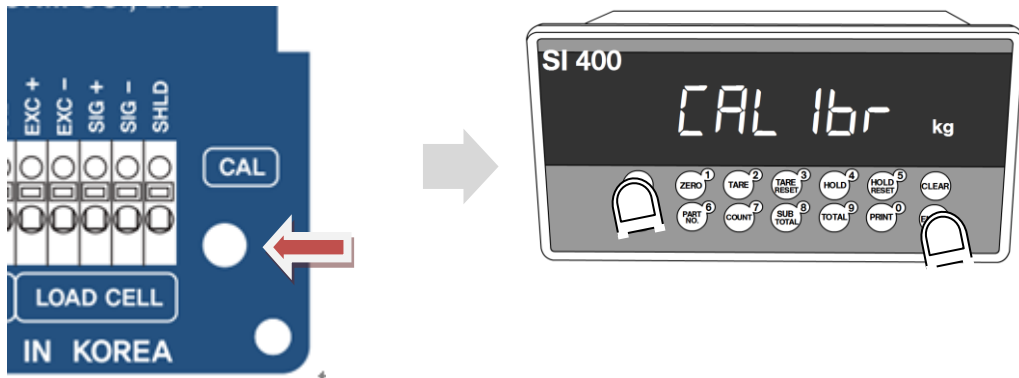


Before start to the calibration mode,

Please turn on the indicator and preheat about 15 min.

Calibration key function			
Key button	Function	Key button	Function
	Test Weight Calibration mode / Setting decimal point Setting decimal point		Simulation Calibration Mode / Setting Division 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

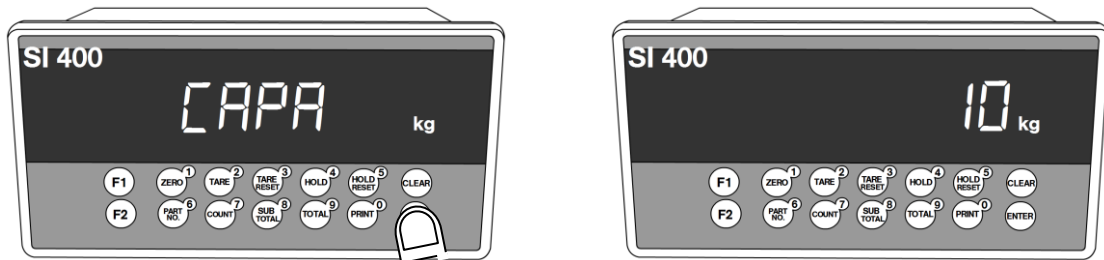
5-2-2. Start Test Weight Calibration Mode



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"

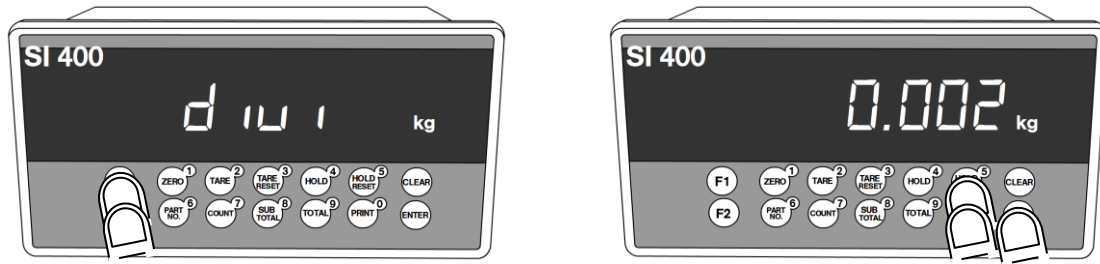


After displaying "CAPA", input max capacity with keys & Press **ENTER** key to save & move to next step.

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 **F1** keys,
and set the division **F2** keys. Press **ENTER** key to save.

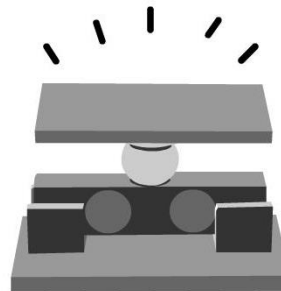
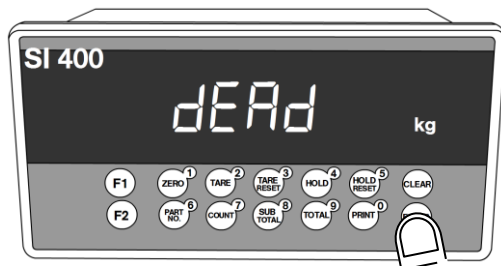
Tip

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.

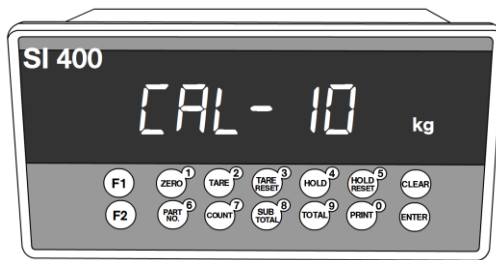
- (division value / Max capacity value) cannot be over 1/20,000.

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.



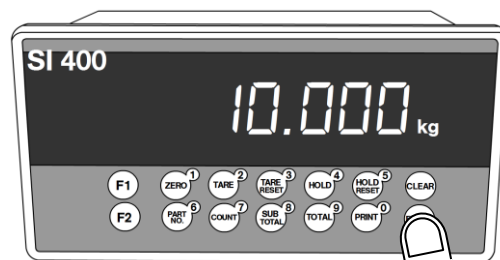
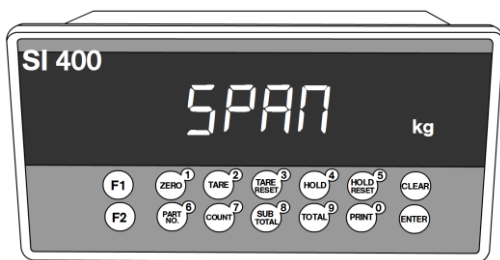
When "DEAD" displays, Press **ENTER** key, then indicator will calculate dead weight of scale part automatically (While this process, there should be nothing on the scale part).




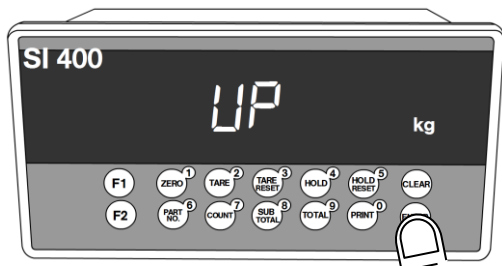
Indicator will search "DEAE weight" during 10secs automatically to find the best condition.

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.

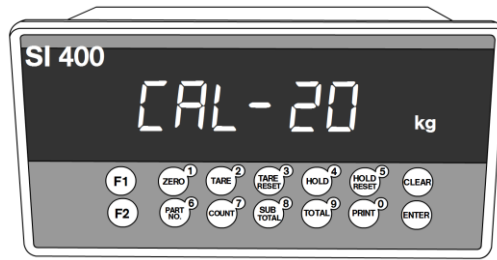
5-2-6. Calculating span value



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



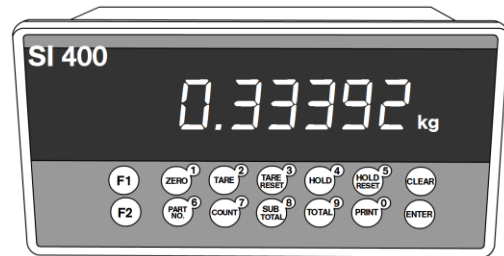
If "UP" is displayed, please load "Test Weight" on the scale part and press  key.



Calculate Span value during 10~20 secs.



When "CALEnd" is displayed and calibration is completed.



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



key.

※This span value is not a weight value.

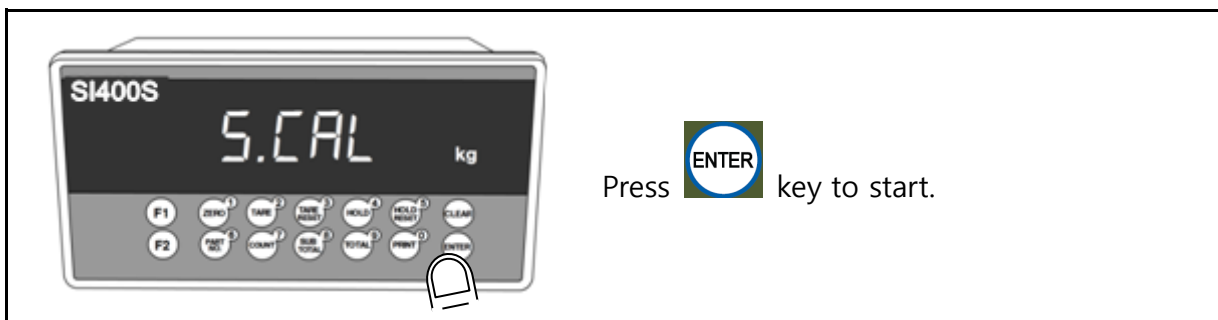
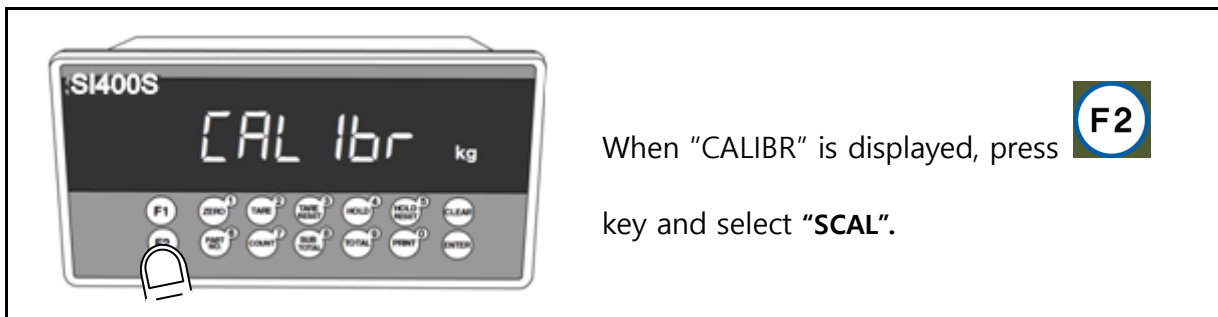
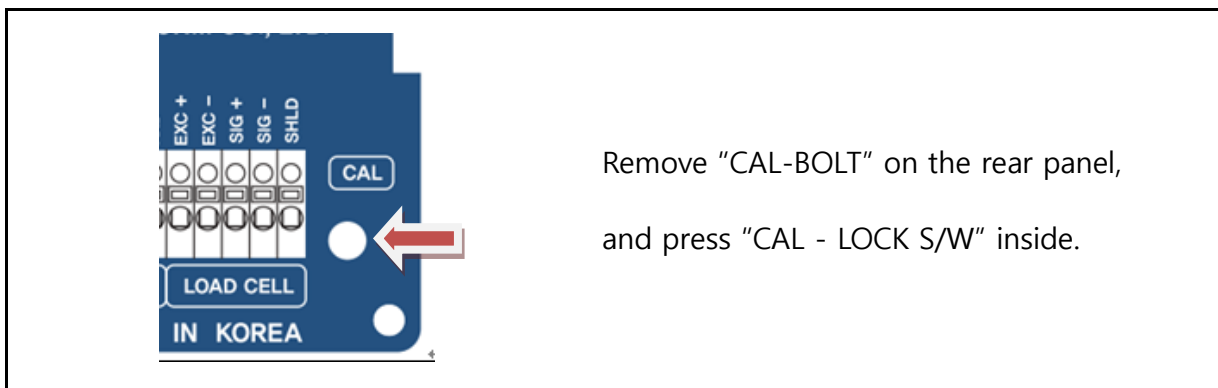
Tip

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

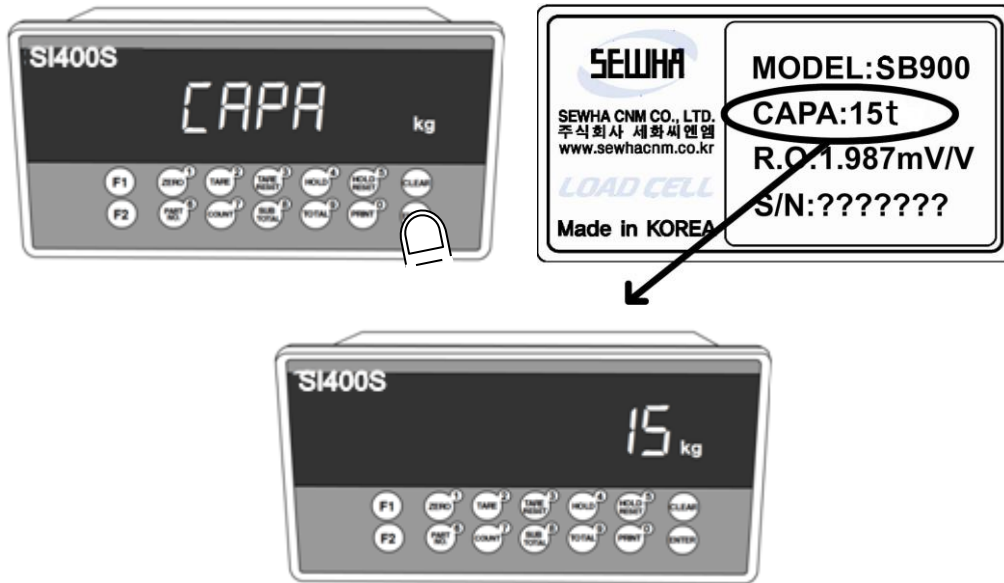
5-3. Simulation Calibration Mode (Calibrate without Test weight)

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"

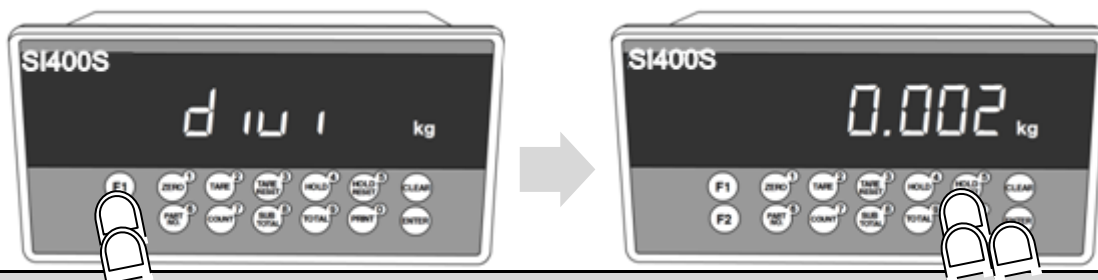





After "CAPA" displayed, Check Max Capacity of Load cell, Input the Max Capacity of Load cell.
(refer the load cell label, or Test Report.) And press  key.

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.

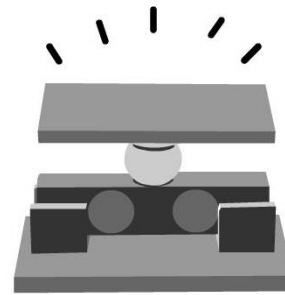
EX) There are 4pcs of load cells, and each load cell's Max capacity is 1,000kg.
Then, total Max Capacity will be 4,000kg(1,000 x 4) and you have to input 4,000.


5-3-3. Decimal point and division setting



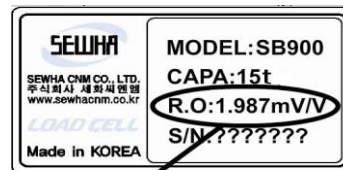
After "DIVI" is displayed, locate the decimal point  keys,
and set the division  keys. Press  key to save.


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.)

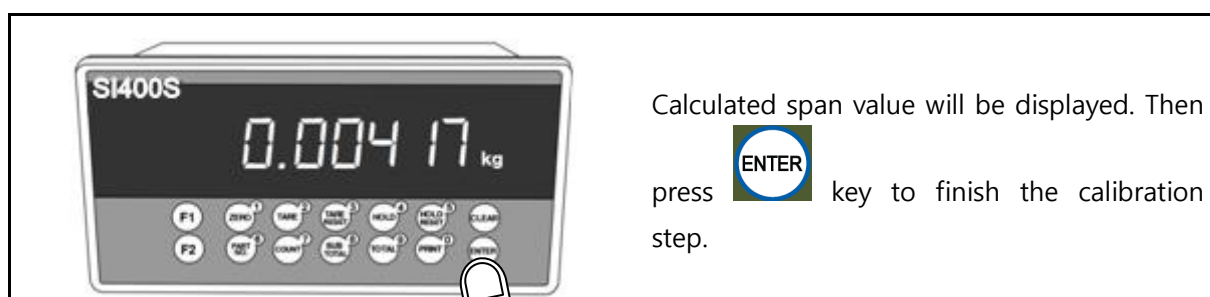
5-3-5. Inputting Max Output (Rated Output Voltage / mV)




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.

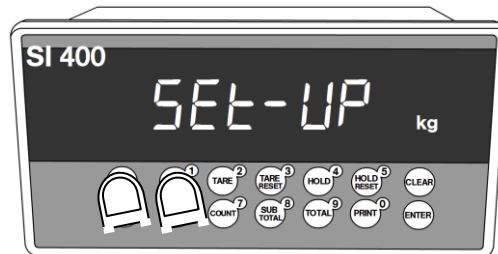


Calculated span value will be displayed. Then press  key to finish the calibration step.

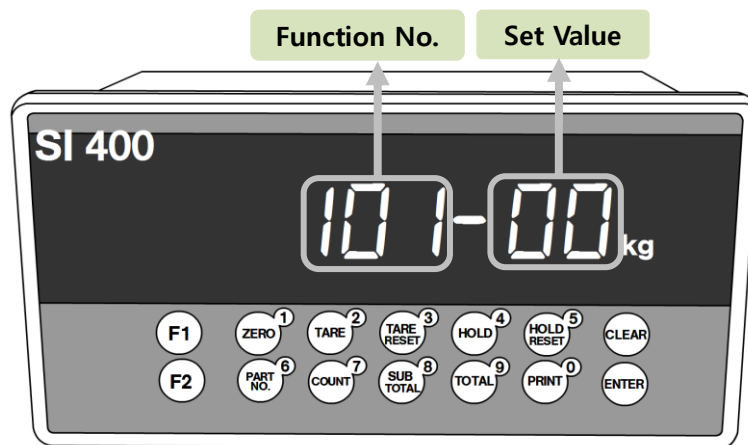
Tip In case of multiple pieces of load cells are connected, the rated output will be same as single Loadcell's. (Because plural load cells are connected with parallel connection, the sum of rated output voltage is same as single load cell's rated output)
※Due to some variation between "State output rate"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



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



- (1) **F1** Function No. up 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	Option
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	
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
160	External Input 5 Setting	13	04 : Tare / Tare	11 : Print
161	External Input 6 Setting	14	Reset 05 : Hold 06 : Hold Reset	12: Sub-total Print 13 : Grand-total Print 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 SI4100) 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 : 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	
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 : 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
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) 03: 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

300	Analog Output Direction	00	00 : Forward 01 : Reverse
301	Analog Output Direction	00	00 : Forward 01 : Reverse
302	Analog Output Standard	03	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


F-list	Subject	Def	Option
502	Empty Relay Output	00	00 : Empty range 01 : Zero
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
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

5-4-3. Hidden Function

How to enter Hidden function setting mode : Press "F2" Key during 4 times and input your password. Default password is "1111". Press "Enter" 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			
HF06	Password is required when you enter to hidden function. Enter the password twice. Password combination within 0~9		
Maximum Capacity Weight Check			
HF07	Check the max capacity which is set under test weighing calibration.		
Span Value Check			
HF08	Check the Span Value		
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	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"  key press (–) Setting. Input range : -20 ~ +20 , basic value : 0		

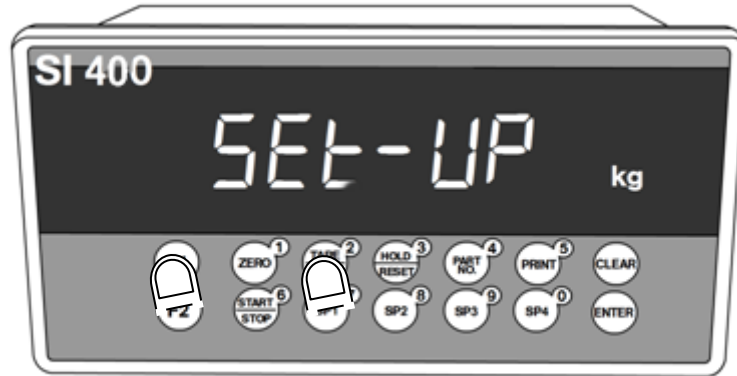
Maximum Analog Output Setting	
F11	<p>Maximum Analog Output (Analog out 4~20mA / 0~10V). The 4-20Ma's begin number is "0", so after enter the Function mode and write the "-4" to show "20mA"</p>  key press (-) Setting. Input range : -20 ~ +20 , basic value : 0
Function List Factory Reset	
HF14	Change to default F-setting (ALL SET -> Press "number 1 key" -> YES-> Input)
Factory Reset	
HF15	Change the all function from first time. (ALL SET -> Press "number 1 key" -> YES-> Input)
Ip Address Check and modification	
HF16	Ip Address can Check and modification.
Ip Address Check and modification	
HF17	Ip Address can Check and modification.
Ip Address Check and modification	
HF18	Ip Address can Check and modification.
Ip Address Check and modification	
HF19	Ip Address can Check and modification.
GateWay Check and modification	
HF20	GateWay can Check and modification.
GateWay Check and modification	
HF21	GateWay can Check and modification.
GateWay Check and modification	
HF22	GateWay can Check and modification.
GateWay Check and modification	
HF23	GateWay can Check and modification.
SubNet Mask Check and modification	
HF24	SubNet Mask can Check and modification.
SubNet Mask Check and modification	
HF25	SubNet Mask can Check and modification.
SubNet Mask Check and modification	
HF26	SubNet Mask can Check and modification.




SubNet Mask Check and modification			
HF27	SubNet Mask can Check and modification.		
Ethernet Port Number Check and modification			
HF28	Ethernet Port Number can Check and modification.		
Zero Range Check and modification			
HF29	Zero Range can check and modification		
Simulation calibration Setting			
HF30	<input checked="" type="radio"/>	00	Disuse
	<input type="radio"/>	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	<input checked="" type="radio"/>	0	Server Mode Simplex(F250-00): Data transfer to unspecified IP as one way Duplex(F250-01): Data transfer to asked IP
	<input type="radio"/>	1	Client Mode Data transfer to IP as set HF31~34 with port as set HF28







5-5. Test Mode



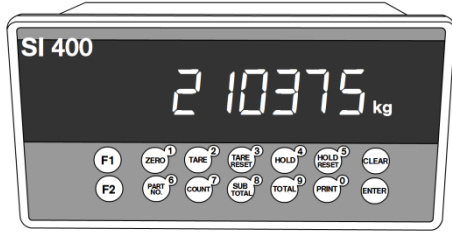
Before starting the TEST mode, please remove operating devices.



- 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		Display
	Analog Variation Value		External Input
	Key		Analog out

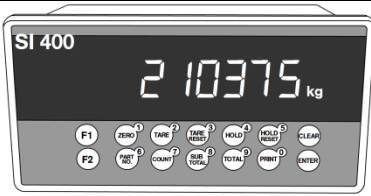
5-5-1. Analog value Check



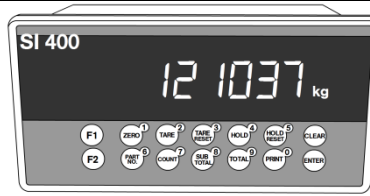
Display the analog value as digitalized. Variable of unit place is not abnormal.

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

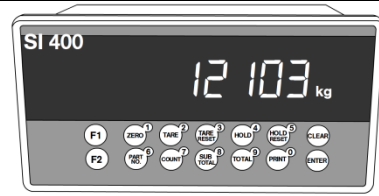
If there is big variation of analog value or no change although adding load, it is doubted Load cell problem or analog part problem in indicator.



ZERO 1 Display from Hundred thousand's place.

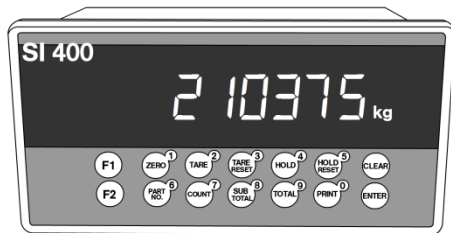


TARE 2 Display from Million's place.

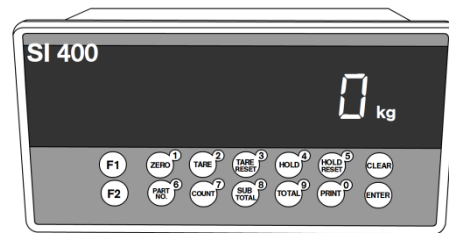


TARE RESET 3 Display from Ten Million's place.

5-5-2. Analog Deviation Check Mode

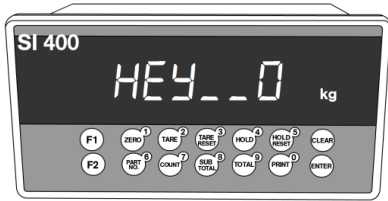


Display the analog value as digitalized, then make zero to check Analog Deviation.



Making zero is by pressing **ZERO** 1 key..

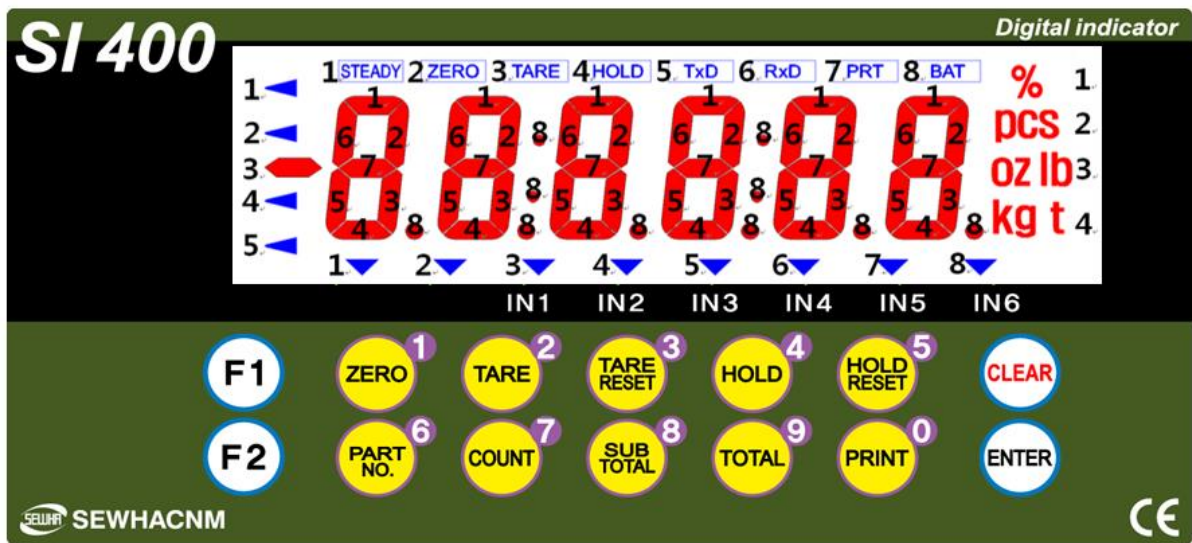
5-5-3. Key check mode



Show on the screen the pressing each Key.

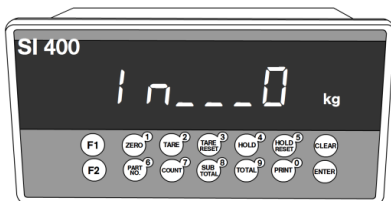
Key button	Display	Key button	Display
ZERO ¹	1	SUB TOTAL ⁸	8
TARE ²	2	TOTAL ⁹	9
TARE RESET ³	3	PRINT ⁰	0
HOLD ⁴	4	CLEAR	10
HOLD RESET ⁵	5	F1	11
PART NO. ⁶	6	F2	12
COUNT ⁷	7		

5-5-4 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).

5-5-5 External Input Check Mode



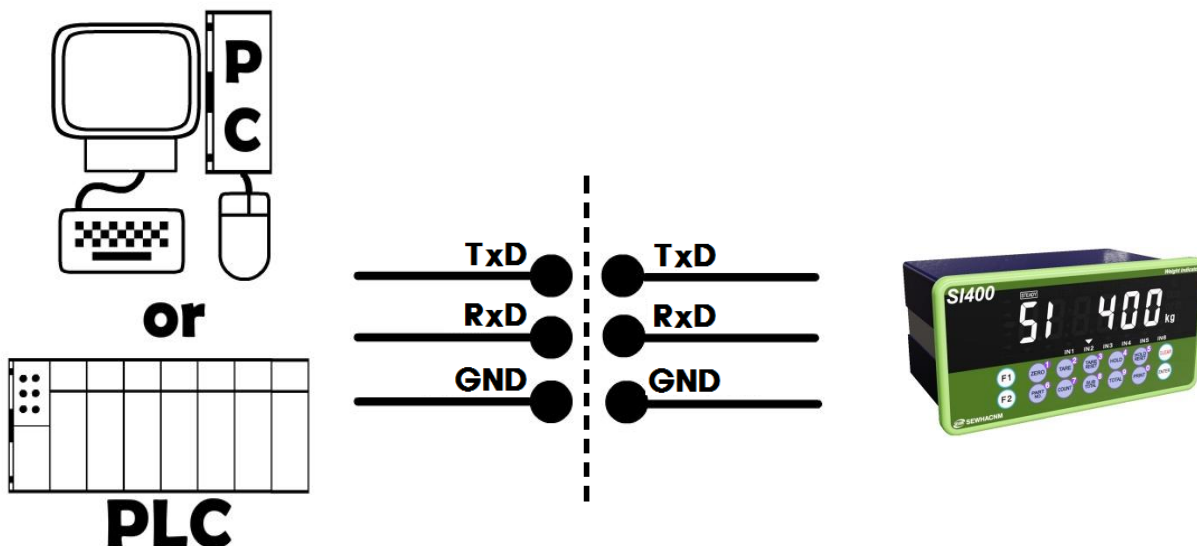
Show which External input is working.

6. INTERFACE

6-1. Serial Interface

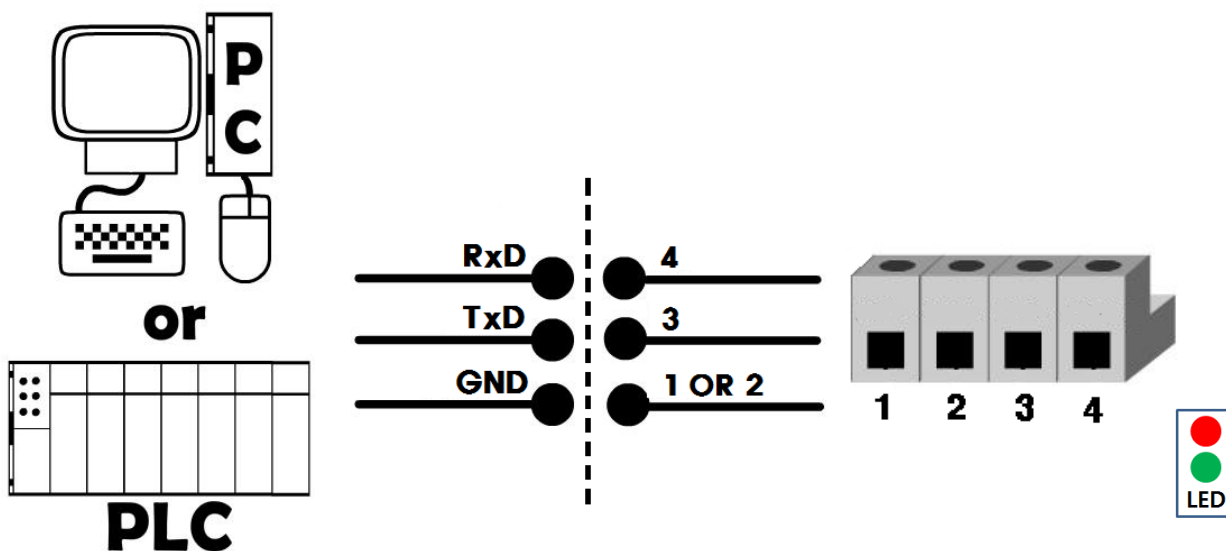
6-1-1. Standard serial interface terminal

(1) RS - 232

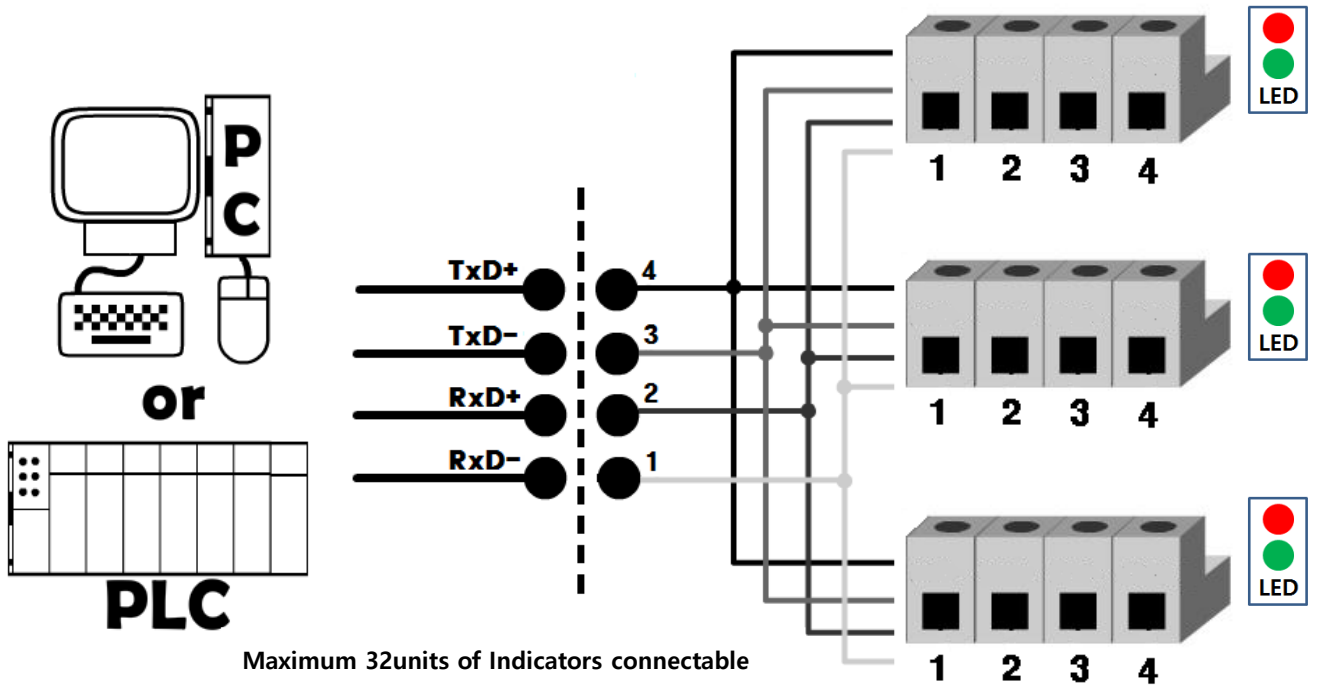


6-1-2. Option serial interface terminal

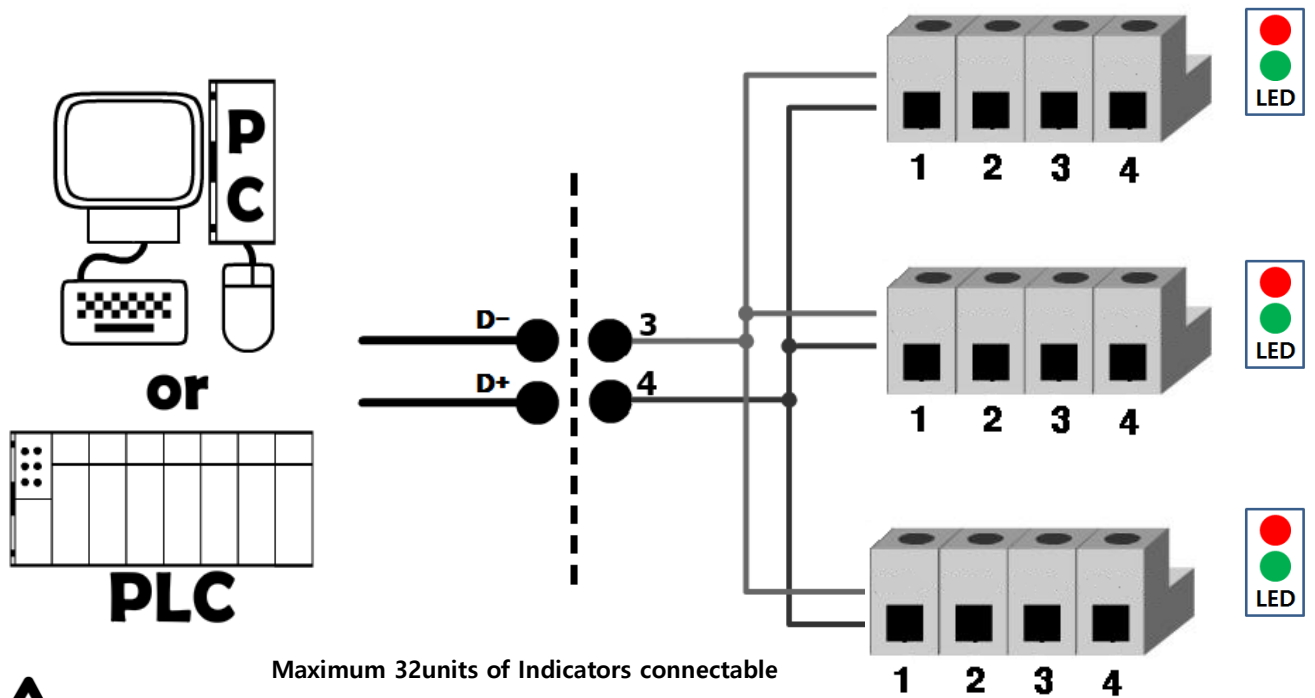
(1) RS - 232



(2) RS – 422



(3) RS – 485

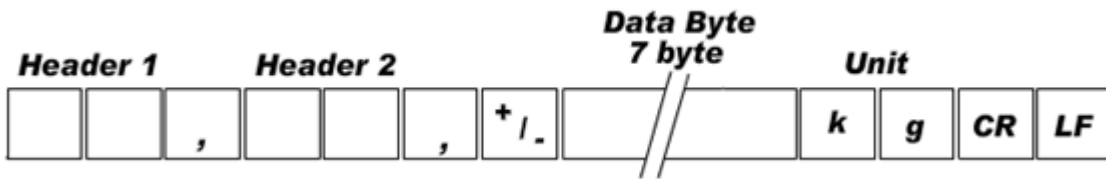


Caution

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.

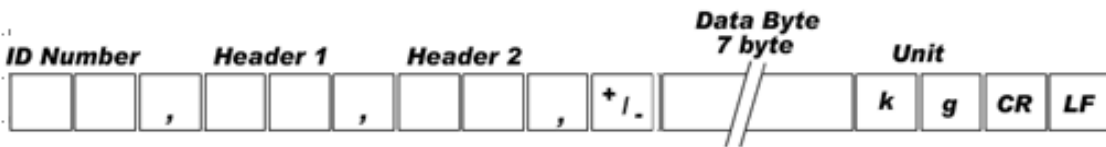
6-1-3. Data Format

(1) Data Format 1 : ID Number is not be transferred. (Refer F-function 203-00) -18byte



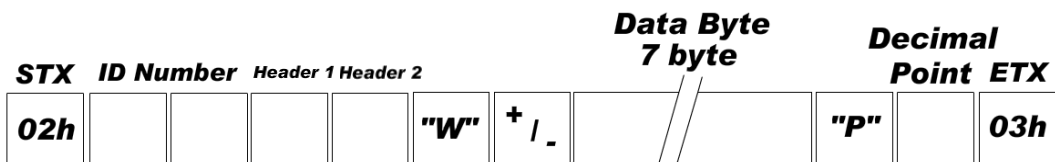
Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : STEADY	GS : when setting TARE
US : UNSTEADY	

(2) Data Format2 : ID Number + Data Transference (Refer F-function 100, 203-01) -21byte



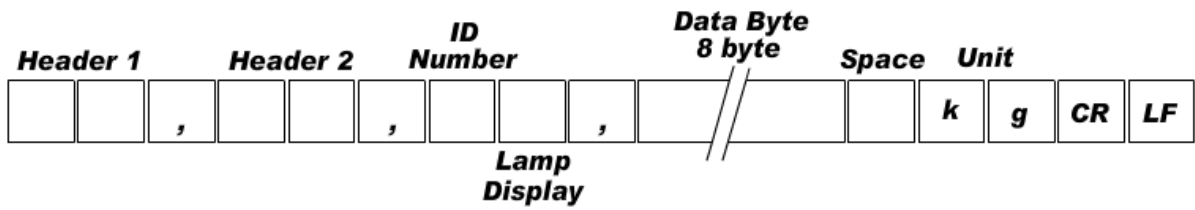
Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : STEADY	GS : when setting TARE
US : UNSTEADY	

(3) Data Format3 : ID Number + State (Refer F-function 100, 203-02) -17byte



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

(4) CAS Format (22byte) : ID Number (Refer F-function 203-03) -22byte

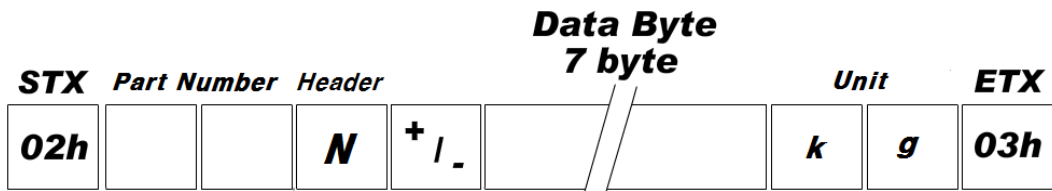


Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : STEADY	GS : when setting TARE
US : UNSTEADY	

LAMP DISPLAY

Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
ZERO 1	TARE	Gross Weight	Print	HOLD	1	STEADY	1

(5) Format 5 (P/N, Judgement weight, Weight transmission, 203-04) :- 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 for SI400 (Under F-function 202/212-01)

Error Code		
0 : Normality	1 : Check-Sum Error	
2 : Data length Error	3 : Number data Error	
4 : Excess of write data's allowable range		
Current Weight		
ASCII : STX ID(2Byte) RCWT ETX		Length
SI 400 Response	Reception: STX + ID(2Byte) + RCWT + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RCWT + State 1(1Byte) + State 2(1Byte) + P + Decimal Point(1Byte) + Mark(1Byte) + Current weight(6Byte) + unit(2Byte) +ETX [21Byte]	21 byte
	State 1: O(Overload), S(stable), U(unstable) State 2: N(Net Weight), G(Gross Weight)	
Current data		
ASCII : STX ID(2Byte) RCWD ETX		Length
SI 400 Response	Reception: STX + ID(2Byte) + RCWD + ETX [8Byte]	8 byte
	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]	46 byte
Sub-total data		
ASCII : STX ID(2Byte) RSUB ETX		Length
SI 400 Response	Reception: STX + ID(2Byte) + RSUB + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RSUB + P + Decimal Point(1Byte) + Part number(2Byte) + Sub-total Count(6Byte) + Sub-tatol weight(10Byte) + unit(2Byte) + ETX [30Byte]	30 byte

Grand-total data		
ASCII : STX ID(2Byte) RGRD ETX		Length
SI 400 Response	Reception: STX + ID(2Byte) + RGRD + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RGRD + P + Decimal Point (1Byte) + Grand total count(6Byte) + Grand total weight(10Byte) + unit(2Byte) + ETX [28Byte]	28 byte
Sub-total count data		
ASCII : STX ID(2Byte) RSNO ETX		Length
SI 400 Response	Reception: STX + ID(2Byte) + RSNO + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RSNO + Sub-total count(6Byte) + ETX [14Byte]	14 byte
Current time data		
ASCII : STX ID(2Byte) RTIM ETX		Length
SI 400 Response	Reception: STX + ID(2Byte) + RTIM + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RTIM + Time(6Byte) +ETX [14Byte]	14 byte
Current date data		
ASCII : STX ID(2Byte) RDAT ETX		Length
SI 400 Response	Reception: STX + ID(2Byte) + RDAT + ETX[8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RDAT + Current date(6Byte) +ETX [14Byte]	14 byte
Tare Data		
ASCII : STX ID(2Byte) RTAR ETX		Length
SI 400 Response	Reception: STX + ID(2Byte) + RTAR + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RTAR + P + Decimal Point(1Byte) + Mark(1Byte) + Tare weight(6Byte) + ETX [17Byte]	17 byte
Current P/N data		
ASCII : STX ID(2Byte) RPNO ETX		Length
SI 400 Response	Reception: STX + ID(2Byte) + RPNO + ETX [8Byte]	8 byte
	Transmission: STX + ID(2Byte) + RPNO + Part number(2Byte) + ETX [10Byte]	10 byte

6-1-6 Write COMMAND for SI400 (Under F-function 202/212-01)

-Receive(Normal): STX + ID(2Byte) + ACK+ ERR_CODE + ETX [6Byte]

-Receive(Error): STX + ID(2Byte) + NAK + ERR_CODE +ETX [6Byte]

Zero			
ASCII : STX ID(2Byte) WZER ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK	Error : STX + ID(2BYTE) + NAK	Normal:6 byte
	+ ERROR_CORD (1BYTE) + ETX	+ ERROR_CORD (1BYTE) + ETX	Error : 6 byte

Tare Setting			
ASCII : STX ID(2Byte) WTAR ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Tare Reset			
ASCII : STX ID(2Byte) WTRS ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Print			
ASCII : STX ID(2Byte) WPRT ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Sub – Total Print			
ASCII : STX ID(2Byte) WSPR ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Sub – Total Print			
ASCII : STX ID(2Byte) WSTC ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Grand – Total Print			
ASCII : STX ID(2Byte) WGPR ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Grand - Total Delete			
ASCII : STX ID(2Byte) WGTC ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Time Setting			
ASCII : STX ID(2Byte) WTIM Time(6byte) ETX			14 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Date Setting			
ASCII : STX ID(2Byte) WDAT Date(6byte) ETX			14 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Part Number Setting			
ASCII : STX ID(2Byte) WPNO Part number(2 byte) ETX			10 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte

Hold Setting			
ASCII : STX ID(2Byte) WHOL ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 byte
Hold Reset			
ASCII : STX ID(2Byte) WHRS ETX			8 byte
SI 400 Response	Normal : STX + ID(2BYTE) + ACK + ERROR_CORD (1BYTE) + ETX	Error : STX + ID(2BYTE) + NAK + ERROR_CORD (1BYTE) + ETX	Normal:6 byte Error : 6 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

6-1-7. Read COMMAND for SI400 (Under F-function 202/212-02)

Current Weight	
ASCII : STX ID(2Byte) RCWT ETX	HEX : 02 30 31 52 43 57 54 03
SI 400 Response	STX ID RCWT State1(2byte) State2(2byte) Mark+/(1byte) Current weight(7byte) unit(2byte) ETX State1 : OL(Overload), ST(stable), US(unstable) State2 : N(Net Weight), G(Gross Weight)
Current data	
ASCII : STX ID(2Byte) RCWD ETX	HEX : 02 30 31 52 43 57 44 03
SI 400 Response	STX ID RCWD Date(6byte) Time(6byte) Part number(2byte) Count(6byte) Tare weight(7Byte) Current weight(7byte) unit(2byte) ETX
Sub-total data	
ASCII : STX ID(2Byte) RSUB ETX	HEX : 02 30 31 52 53 55 42 03
SI 400 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
SI400 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
SI400 Response	STX ID RGRD Part number(2byte) Grand-total count(6byte) Grand-total weight(11byte) unit(2byte) ETX
Current Time data	
ASCII : STX ID(2Byte) RTIM ETX	HEX : 02 30 31 52 54 49 4D 03
SI 400 Response	STX ID RTIM Current time(6byte) ETX
Current date data	
ASCII : STX ID(2Byte) RDAT ETX	HEX : 02 30 31 52 44 41 54 03
SI 400 Response	STX ID RDAT Current date(6byte) ETX
Tare weight data	
ASCII :STX ID(2Byte) RTAR ETX	HEX : 02 30 31 52 54 41 52 03
SI400 Response	STX ID RTAR Tare weight(7byte) ETX
Current P/N data	
ASCII : STX ID(2Byte) RPNO ETX	HEX : 02 30 31 52 50 4E 4F 03
SI400 Response	STX ID RPNO Current Part number(2byte) ETX

6-1-8. Write COMMAND for SI400 (Under F-function 202/212-02)

Zero	
ASCII : STX ID(2Byte) WZER ETX	HEX : 02 30 31 57 5A 45 52 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Tare Setting	
ASCII : STX ID(2Byte) WTAR ETX	HEX : 02 30 31 57 54 41 52 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Tare Reset	
ASCII : STX ID(2Byte) WTRS ETX	HEX : 02 30 31 57 54 52 53 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX

Hold Setting	
ASCII : STX ID(2byte) WHOL ETX	HEX : 02 30 31 57 48 4F 4C 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Hold Reset	
ASCII : STX ID(2byte) WHRS ETX	HEX : 02 30 31 57 48 52 53 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Print	
ASCII : STX ID(2Byte) WPRT ETX	HEX : 02 30 31 57 50 52 54 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Sub – Total Print	
ASCII : STX ID(2Byte) WSPR ETX	HEX : 02 30 31 57 53 50 52 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Grand Total Print	
ASCII : STX ID(2Byte) WGPR ETX	HEX : 02 30 31 57 47 50 52 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Sub – Total Delete	
ASCII : STX ID(2Byte) WSTC ETX	HEX : 02 30 31 57 53 54 43 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Grand – Total Delete	
ASCII : STX ID(2Byte) WGTC ETX	HEX : 02 30 31 57 47 54 43 03
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Time Setting	
ASCII : STX ID(2Byte) WTIM Time data(6byte) ETX	
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Date Setting	
ASCII : STX ID(2Byte) WDAT Date data(6byte) ETX	
SI400 Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX

Part Number Setting	
ASCII : STX ID(2Byte) WPNO Part number(2byte) ETX	
SI400 Response	Normal : STX ID ACK ETX Error : 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

Tip

6-1-9. Modbus Memory Map

- 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.

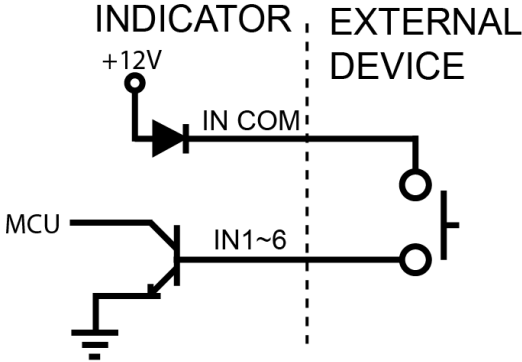
Address Map Sample

Address	Length	Feature	Description
150	2	RO	Max Capacity
154	2	RO	Analog Value
160	2	RO	Current Weight
162	2	RO	Tare Weight

6-2. External Input

Each External Input function setting is F-Function 156~161 possible.

6-2-1. External Input configuration



6-2-2. External Input connector connection

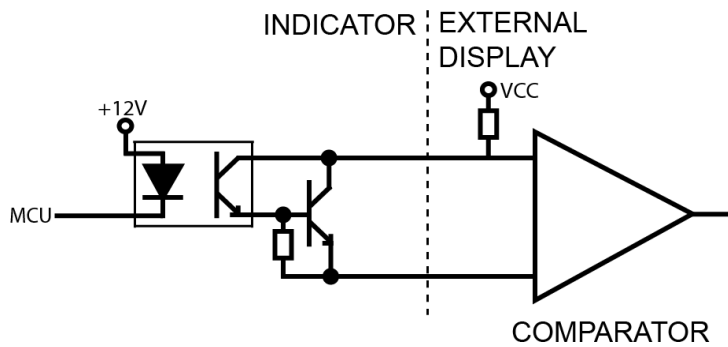
TERMINAL	I1	I2	I3	I4	I5	I6	IC
INPUT	IN1	IN2	IN3	IN4	IN5	IN6	IN COM

6-3. Current loop

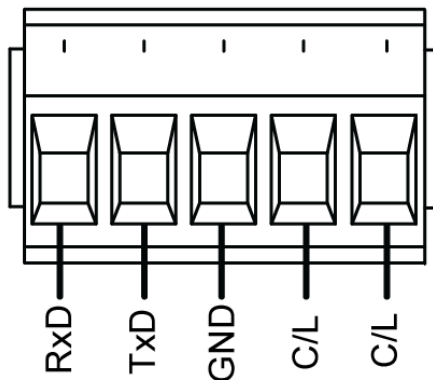
Current loop is suitable for middle distance transmission because stronger than RS-232C against electric noise. (About 100M)

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

6-4. 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.

6-4-1. Specification

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

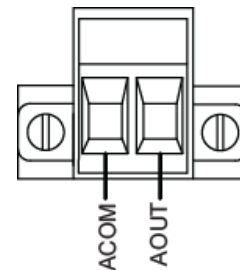
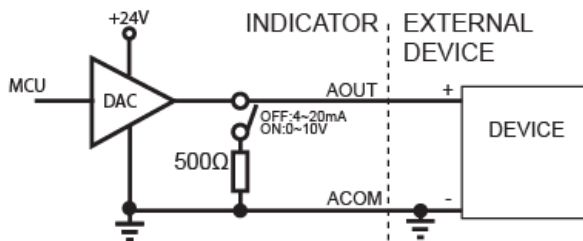
Under Calibration mode or "Ad-Err" condition, Analogue output will not activated.

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.

6-4-2. Circuit composition and connector

4-20mA will be out proportioned on current weight.



ACOM	AOUT
-	+

6-4-3. 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 HF10 Minimum Analog Output Setting" mode.

Step3) Adjust the displaying value of indicator with keys(ex : 04.0 –about 4mA) 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 (ex : 20.0 - about 20mA) 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.**

6-5. 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.

6-5-1. Specification

Output Voltage	0~11V DC output
Accuracy	1/5,000

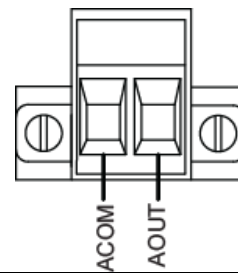
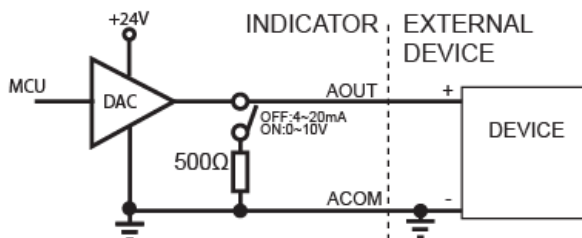
Under Calibration mode or "Ad-Err" condition, Analogue output will not activated.

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

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



ACOM	AOUT
-	+

6-5-3. 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 HF10 Minimum Analog Output Setting" mode.

Step3) Adjust the displaying value of indicator with keys(ex : 00.0 –about 0V) to make Digital multi meter's value as minimum(ex:0V) 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 (ex : 10.0 - about 10V)) 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.**

6-6. 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.

6-7. 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.

6-7-1. Print Format

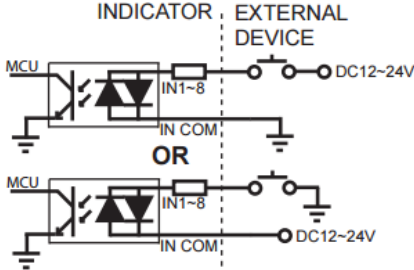
	Korean(120-00)	English (120-01)
Continuous Print 121-00	<pre> ===== 날짜 : 2011-05-10 시간 : 18:00:10 장비번호 : 1 장비 품번 순번 중량 1 10 1 1.330kg 1 10 2 5.350kg 1 10 3 2.358kg </pre>	<pre> ===== DATE : 2011-05-10 TIME : 18:00:10 ID No : 1 ID PART SERIAL WEIGHT 1 10 1 1.330kg 1 10 2 5.350kg 1 10 3 2.358kg </pre>
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 총계량및수 : 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.

6-8. BIN IN card (Changing Product number)

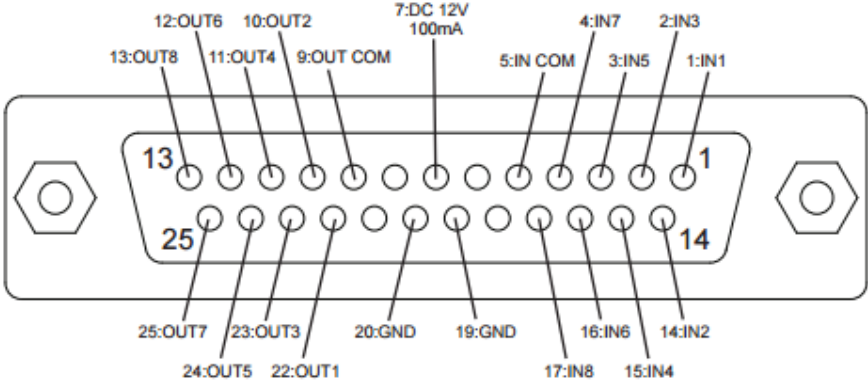
6-8-1. BIN IN card circuit composition

INPUT



6-8-2. BIN IN card connection

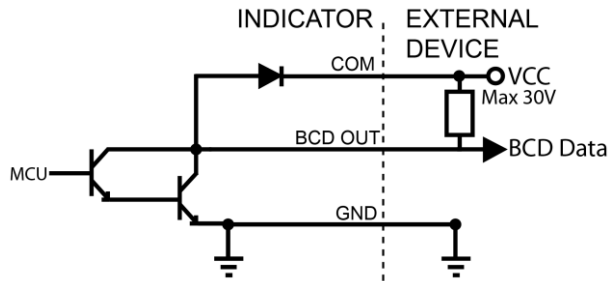
CONNECTOR D-SUB 25P FEMALE



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	-

6-9. BCD OUT Card (Weight data out)

6-9-1. Circuit composition



6-9-2. Card switch setting

SWITCH	BASIC	MOTION
NON-INVERT	HIGH	LOW
INVERT	LOW	HIGH

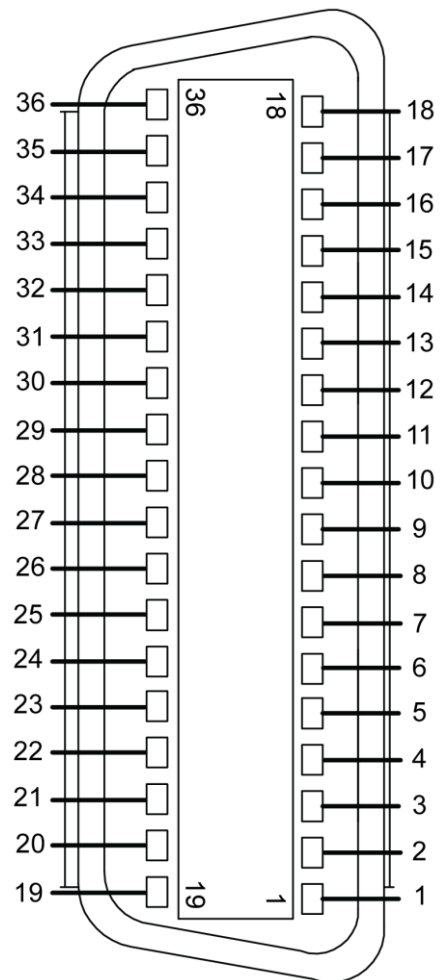
6-9-3. BCD OUT card specification

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

6-9-4. BCD OUT card connection

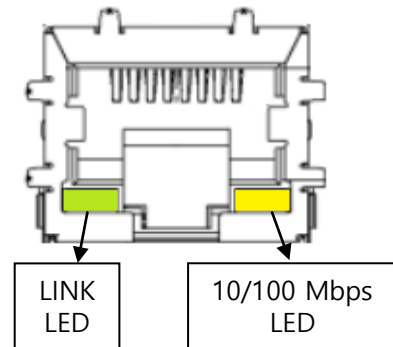
Role	Pin No.	Role	Pin No.
1X1	19	4X10000	28
2X1	2	8X10000	11
4X1	20	1X100000	29
8X1	3	2X100000	12
1X10	21	4X100000	30
2X10	4	8X100000	13
4X10	22	COM	32
8X10	5	Net-weight (HIGH)	31
1X100	23	Total weight (LOW)	31
2X100	6	GND	1, 14
4X100	24	Disuse	15
8X100	7	Decimal point 0.000	33
1X1000	25	Decimal point 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



6-10. Ethernet card

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

Function 250-00 (Stream mode)
Function 250-01 (Command mode)



6-11. SD memory card

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



Caution SD Memory option card has to be installed OP2 slot.

6-11-1. . Saving format (File name: N+YYMMDD (Ex: N160728))

DATE	TIME	ID	PART	SERIAL	WEIGHT	UNIT
2016-07-28	12:18:04	1	50	22	301.4	kg
2016-07-28	12:18:10	1	50	23	301.4	kg
2016-07-28	12:18:10	1	50	24	301.4	kg

6-11-2. Sub-total weight format (File name: S+YYMMDD (Ex: S160728))

DATE	TIME	ID	PART	SUB TOTAL COUNT	SUB TOTAL WEIGHT	UNIT
2016-07-28	12:27:30	1	15	17	4622.0	Kg

6-11-3. Grand-total weight format (File name: T+YYMMDD (Ex: SA160728))

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

DATE	TIME	TOTAL COUNT	TOTAL WEIGHT	UNIT
2016-07-28	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

6-11-3. Recommended model

Memory	Model	Form factor	Class
4G	SanDisk SDHC memory card 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

6-12. 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>Err001</i>	When Max capacity/digit value is over 20,000	Re-input the Max Capacity, less than 20.00 (Max Capacity / Digit)
<i>Err004</i>	Standard weight value is over than Max Capacity	Re-input Standard weight value with Number keys, under Max Capacity
<i>Err005</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>Err006</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>Err007</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-009</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
<i>Err010</i>	Under "F-function" model, set value is "N.A"	Check the correct value and re-input
<i>Err011</i>	Tare key Operation Range Over	F532 – XX Check
<i>Err012</i>	Empty Check Error(auto tare)	Tare weight Ccheck

7-3. Digital Weighing Indicator

Display	Cause	Treatment
Ad-Err or OVER	1. Load cell Error 2. Load cell cable Error 3. Load cell connection Error 4. A/D Board Error 5. If Analogue value is over 1,040,000. ※ When weigh "-" value, If it is over set max capa, "OVER" is displayed. Ex) Even though set max capa is "100" and it is over "-100", "OVER" is displayed.	1. Under "TEST" mode 1, check analogue value. If you cannot get any analogue value or there is no change although adding load, please check load cell, load cell cable, connection conditions first. 2. Replace another load cell, and check the indicator condition. If you have same problem, please replace new indicator and check A/D board error. 3. Try to connect the indicator's A/D with the other indicator. 4. Check the power and connection of terminal.
UnPASS	1. Power is ON, when some materials are on weighing part. ※ Under "Normal Mode", if there are more than 20% loading of Max capacity, "Un-Pass" display will be appeared and indicator will stay until removing the load. ※ Setting Back-up mode it can memory empty value, and it becomes set value without displaying" Un-pass")	1. If you set "Normal Mode", please check weighing part empty or not before turn on the power. If there are some materials in/on weighing part, please remove those materials and turn on the power. 2. Please try to set F-function 102-02(Back-up) mode so that the indicator can remember first empty value.
HALT	H/W has some problem.	Please contact the distributor or Head Office.

※ Under "Ad-err", Zero key, Tare key, Hold key and print key will not be activated.

WARRANTY CERTIFICATION

This product is passed "Sewhacnm's strict quality test.

If there is defect of manufacturing or abnormal detection within warrantee period, please contact our Agent or Distributor with this Warrantee certificate.

Then, we will repair or replace free of charge.

WARRANTY CLAUSE

1. The Warranty period, we can guaranty, 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

SEWHACNM Co.,Ltd. #504, 302dong, 397, Seokcheon-ro, Ojeong-gu, Bucheon-si, Gyeonggi-do, Korea Made in KOREA Website : http://www.sewhacnm.co.kr , Email : sales@sewhacnm.co.kr	Product	Digital Weighing Indicator
	Model	SI 400
	Serial No.	
	AUTHORIZED STAMP	