CE

Approved for Digital Weigh Indicator

Digital Weighing Indicator
SI 580E

Instruction Manual

SEWHACNM
주식회사 세화씨엔엠

CONTENTS

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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3. This manual may be changed as the version is upgraded, without previous notice.

Inquiries

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

Head Office : SEWHA CNM CO., LTD.

Website : www.sewhacnm.co.kr

Email : sales@sewhacnm.co.kr

2. INTRODUCTION

2-1. Introduction

Thank you for your choice of this SI580E Industrial Digital Weighing Controller.

This SI580E model is high-performance weighing controller.

SI 580E model has various kinds of "Weighing Modes" – with 4pcs Control Relay output.

And it has 2ports serial interface, and Analogue Output(0~10V or 4~20mA - Selectable).

Please review and learn this instruction Manual and enjoy your process efficiency with "SI 580E" Digital Weighing Controller.

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 580E model is the standard 1/8 DIN SIZE and compact enough, so it is easy to install.
2. Front panel is covered with Polycarbonate film, strong against dust and water.
3. There are standard installed with RS-422&RS-232C or RS-485&RS-232C.
4. The user can select the analog output, 4~20mA(default) / 0~10V.

3. SPECIFICATION

3-1 Specification

Content			Specification
Performance	External Resolution		1/20,000
	Internal Resolution		1/2,097,152 (±1,048,576)
	Input Sensitivity		Min. 0.1μV/V
	Max Signal Input Voltage		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/℃
		Span	10PPM/℃
	Linearity		0.001% of Full Scale
	Analogue Sampling(sec)		60times / sec(MAX)
Environment	Operating Temperature Range		-10℃ ~ +40℃ [14℉ ~ 104℉]
	Operation Humidity Range		40% ~ 85% RH, Non-condensing
Function	Calibration Mode		Test Weight Calibration Mode Simulation Calibration Mode
	Display		6 digit, 15mm(0.6inch) Red Color FND
	Key Pad		5EA Standard Key
	Digital Input		4pcs Digital Input
Communication	Serial Port1 (RS-422/485)		Data Transference, Command Mode Serial Print, **MODBUS(RTU)**
	Serial Port2 (RS-232)		Data Transference, Command Mode Serial Print
Control Output	Analogue Output		0~10V / 4~20mA User selection
	Control Relay Output Card		4pcs Control Relay
Power	Input Power DC 24V Power Consumption Max 8W		
Size	96mm(W) x 48mm(H) x 135mm(D) Including Connector Weight : 350g		

3-2. Front Panel

3-2-1 Front Panel (Display / Key Pad)

3-2-1. Status Lamp

STEADY	When the weight is "STEADY", Lamp is ON.
ZERO	When the current weight is "ZERO", Lamp is ON.
TARE	"TARE" function is set, Lamp is ON.
HOLD	"HOLD" function is set, Lamp is ON.
OUT1	When "OUT1"(Relay) operates, Lamp is ON
OUT2	When "OUT2"(Relay) operates, Lamp is ON
OUT3	When "OUT3"(Relay) operates, Lamp is ON
OUT4	When "OUT4"(Relay) operates, Lamp is ON

3-2-2. Key Operation

	1. Normal Mode : Make Weight value as Zero. 2. Calibration Mode : Cancel the value or move to previous step. 3. F-Function setting : Cancel 4. Set point setting : Cancel
	1.Normal Mode : Set the TARE Function (1st input : "TARE", 2nd input : "TARE Reset") (When "HOLD" or weight value is ZERO, then this key doesn't work.) 2.Calibration Mode : Move to left 3.F-Function setting : Move to left
	1. To set the "HOLD" Function (1st input : "HOLD", 2nd input : "HOLD Reset") 2.Calibration Mode , F-Function setting : Move to right 3. Under "SETUP" Mode, Enter into the "Calibration" Mode. 4. Go into test mode 1 5.Under HOLD setting first digit as "H"
	1. Normal Mode : Print out 2.Calibration Mode , F-Function setting :Increase set value 3. Go into test mode 2 4. Set up Mode : Enter Test Mode. 5. If F-102 set 0, 4, 5, 6 able to weight data to save
	1.Normal Mode : Press this key 4times, within 2secs, enter to "SET-UP" mode. 2.Hidden Mode : on pressing this key by 4 second enter to "Hidden" mode. 2.Calibration Mode : Enter 3.F-Function setting : Save the value go to next step

●Setup Mode :It is a mode can SET UP the calibration, Function list .(refer to CH5. SET UP)

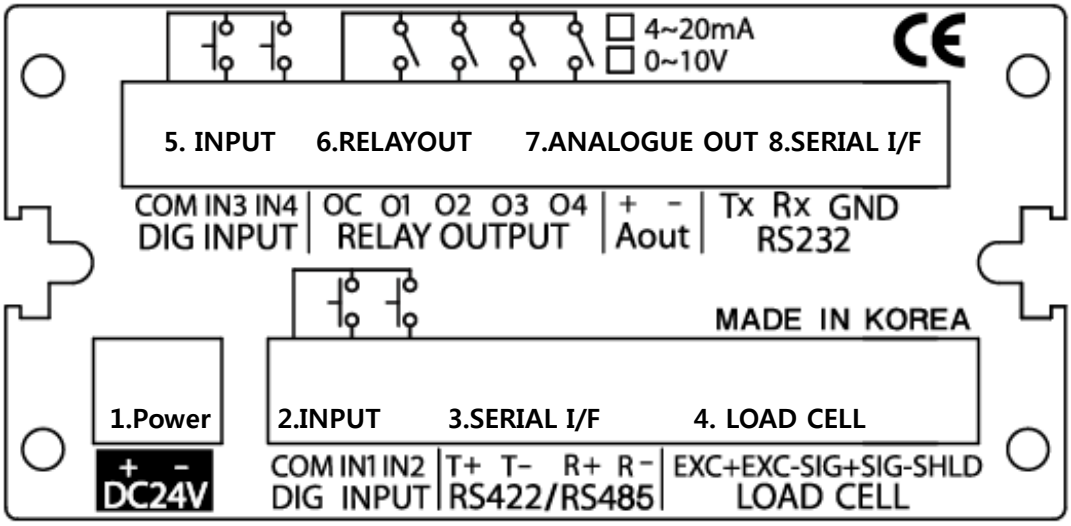
3-2-3. Hot key (with F key)

	**Continuous "TARE" setting** **(From the second TARE setting, use this key)**
	**If the Printer is installed,** **You can print out the "Grand-total data".** **(GRAND-total data can be checked though Print output).**

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)

3-3 Rear Panel



1. Power DC IN: 24V (Power: 24V 1A recommended)

2. External Input terminal: Bottom side 2 port

(Refer to F-233, 234 to select desired function of each input terminal)

3. Serial Interface terminal: Port No.1, Bottom side

Communication Method	TX+ Terminal	TX- Terminal	RX+ Terminal	RX- Terminal
RS – 422(Standard)	TX+	TX-	RX+	RX-
RS – 485(Standard)	Not used	Not used	RTX +	RTX-

4. Load cell Input

EXC+	EXC-	SIG+	SIG-	SHIELD

5. External Input terminal: Top side 2port

(Refer to F235, F236 to select desired function of each input terminal)

6. Relay Output terminal

RELAY COM	RELAY 1	RELAY 2	RELAY 3	RELAY 4

(Output Mode will be determined by F226 ~ F229 detail)

7. Analogue Output terminal (Selectable)

4~20mA (Factory Default)	+	-
0~10V	+	-

8. Serial Interface terminal (port No,2 top side)

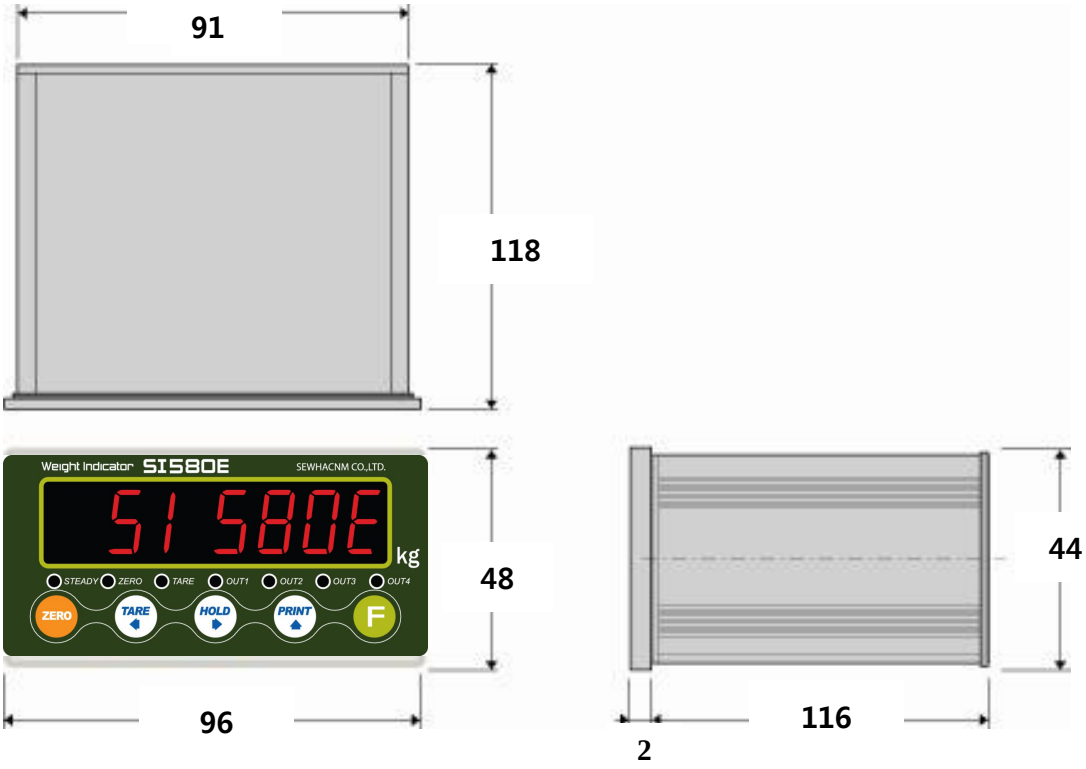
Communication	1(from left)	2	3	4
RS – 232C(Standard)	TX+	RX-	GND	GND
RS – 485(option)	RTX+	RTX-	Not used	Not used
RS – 422(option)	TX	TX	RX+	RX-

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

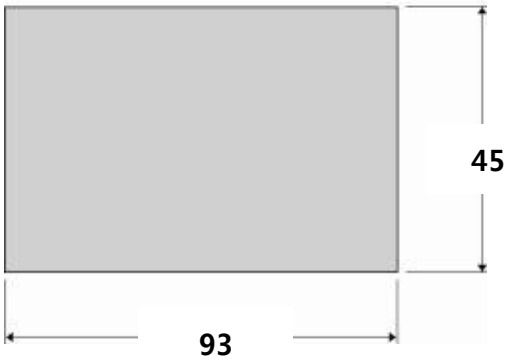
4. INSTALLATION

4-1. External Dimension & Cutting Size

External Dimension (mm)



Cutting Size (mm)



4-2. Installation Components

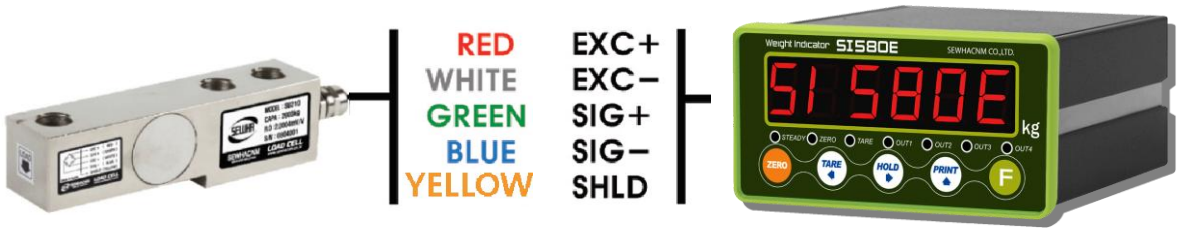



SI580E	Connector (5EA) 3P, 5P, 7P x 3	Pin terminal(15EA)	User Manual

4-3. Load cell Installation

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

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



-----Sewhacnm Co.,ltd. Load cell & wire color----

※ Load cell wire color can be changed without prior notice.

Caution **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.

■ Installation The Load cells

1. You can connect Max 8pcs of same capacity Load cells at once. (350 Ω)
2. You have to make horizontal balance on the ground.
3. If you install more than 2pcs of load cells, use Summing box and adjust output signal difference as minimum. It can make wrong weighing process caused by each load cell's variation.
4. If there is some temperature difference around Load cell, it can cause wrong weight measurement.
5. Don't do Welding job or Arc discharge around installation place. But, there is no choice, please disconnect power cable and Load cell cable.
6. If you measure static electricity material, please make earth between down part and up part of Load cell.

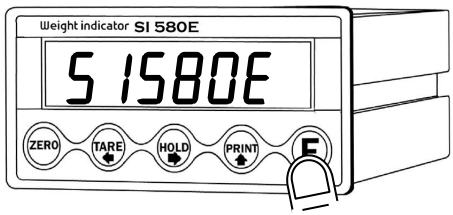
5. SET-UP

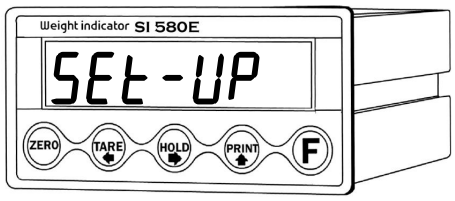
5-1. Set up

This is the Menu which can set the all of the functions.

There may be some display differences between real and on the manual.

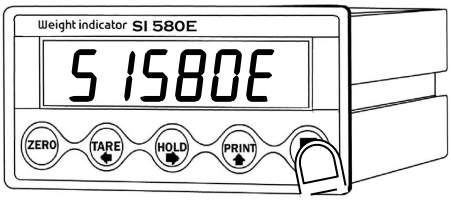
5-1-1. Start "SET UP" Mode (Password not used)

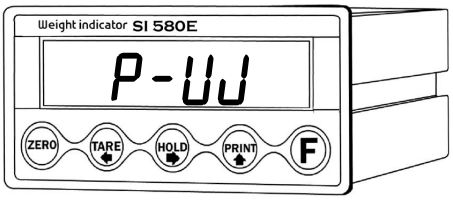




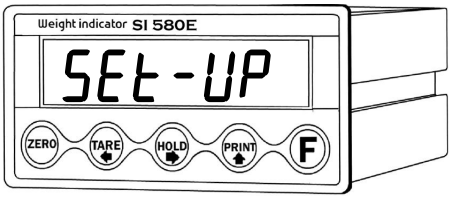
Press F key four times within 2sec.	When "SET UP" is displayed, SETUP Mode is activated.

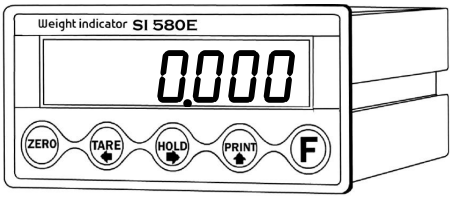
- **Start "SET UP" Mode (Password Use – Refer Hidden Option HF07)**





Press F key four times within 2sec.	If "P-W" displays, input 4 characters password.





If Password is right, "SETUP" Mode starts.	If Password is wrong, it is back to weighing display.

Caution **ı set password by "HF07", "TEST" mode, you cannot start "SETUP" Mode without password. Please don't forget the pass word.**

To Go Each Mode

Calibration	Weight Calibration	F key 4 times → **Pass word**→ TARE → TARE
	Simulation Calibration	F key 4 times → **Pass word** → TARE → HOLD
F-FUNCTION Mode		F key 4 times → TARE
Test Mode1	Analog value	F key 4 times → HOLD → TARE
	Analog difference	F key 4 times → HOLD → HOLD
	Key test	F key 4 times → HOLD → PRINT
	Analog output	F key 4 times → HOLD → F
Test Mode2	Relay Output	F key 4 times → PRINT → HOLD
	Serial I/F	F key 4 times → PRINT → TARE
	Standard Serial I/F	F key 4 times → PRINT → PRINT
	Extended Serial I/F	F key 4 times → PRINT → F
Set Value	Set Target	F key 4 times → F → TARE
	Set Free Fall	F key 4 times → F → HOLD

● **Entering** ZERO means **ESC/UPPER step, Entering** F means **SAVE/NEXT Step.**

■ Adjusting “ZERO” Balance (Calibration)

Adjust weight balance between “Real weight” on the load cell and “Displayed weight of Indicator”. When you replace LOAD CELL or Indicator, you have to Calibration process once again.

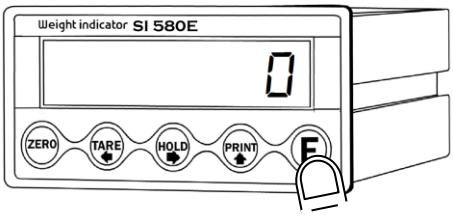
(When you start calibration mode, TARE, HOLD & PRINT will be reset.)

Before processing calibration, please warm up the indicator during 15 min to guarantee more preciseness.

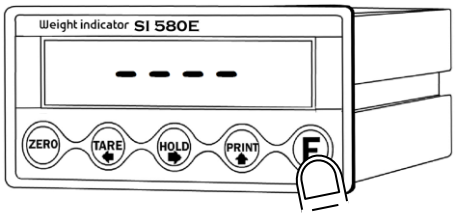
Calibration Key				
				
CANCLE/BACK	Move to left	Move to right	Increase set value	Save and Move to next step

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

5-2-1. Start Test Weight Calibration Mode

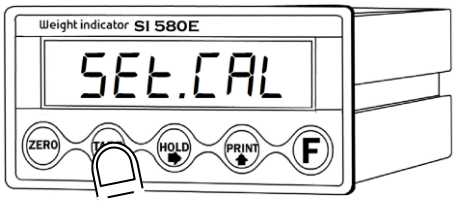


On pressing F key by 4 second

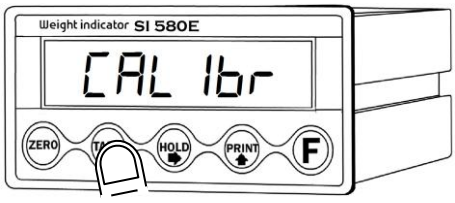


On the screen "----", input **PASSWORD**

press F key



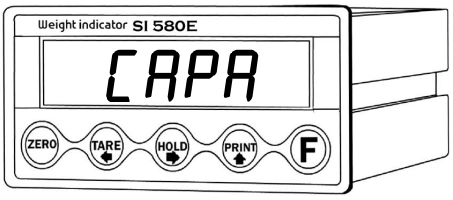
On the screen **"SET.CAL"** press TARE key

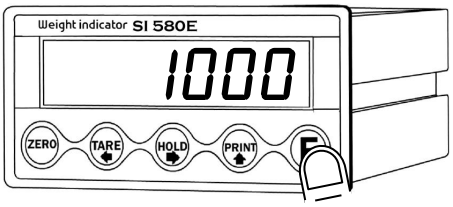


On the screen "CALIBR", press TARE key

Go into CALIBRATION MODE

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

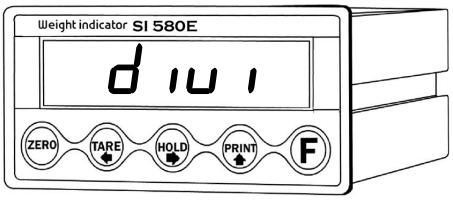


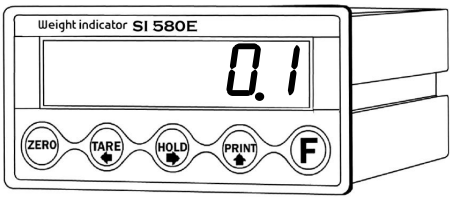


When "CAPA" is showed, input max capacity with keys & Press F key to save the data & move to next step.

Tip **If you want that set Max capacity is 1,000kg, then just input "1000".**

5-2-3. “Decimal Point” and “Digit / Division” Value





After “DIVI” is displayed, set Decimal point with HOLD key.

Whenever you press HOLD key, the decimal point will be changed.

And set Division value with PRINT key, finally press F key to save the data.

Tip

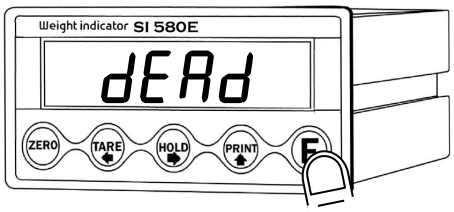
Max Decimal point will be 0.001, and digit can be selectable among 1, 2, 5, 10, 20, 50. Digit and Decimal point must be fulfill the below condition.

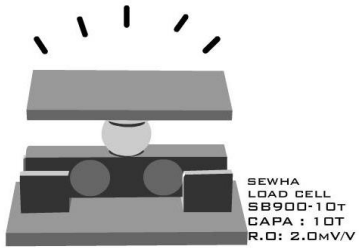
(Division value/Max capacity value) cannot over **1/20,000**.

If the division is so small compare with max capacity,

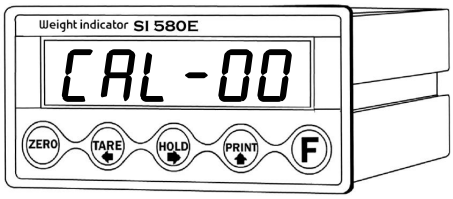
Error message **“Err-01”** will be displayed and move back to **“CAPACITY”** step again.

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





When "DEAD" is displayed, press F key, then indicator will calculate Dead weight of scale part automatically.

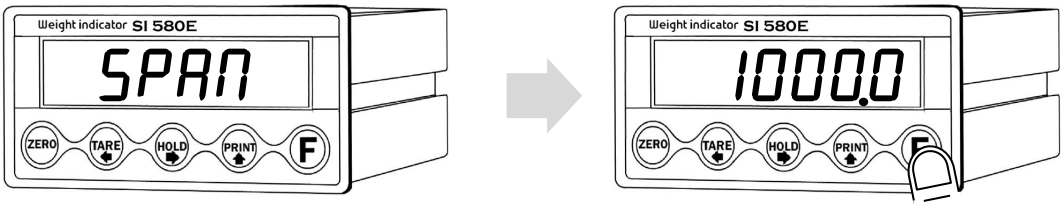


Indicator will search "DEAD weight" during 10~20 seconds to find the best condition.

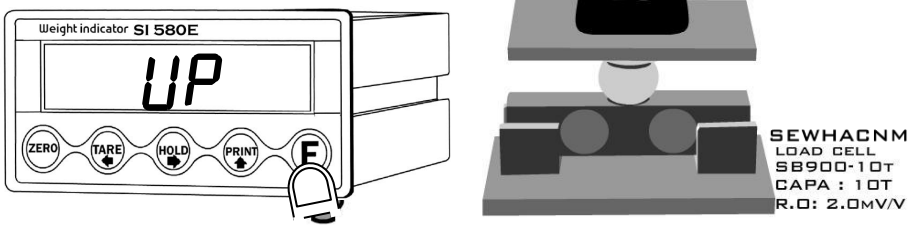
※ To guarantee the preciseness, DEAD weight calculation (CAL00~CAL09) will be operated twice when resolution (Division value /Max capacity value) is less than 1/10,000.

Tip In this step, if there is some force or Vibration on scale part, these unstable conditions will be continued **"Err-A"** will be displayed, and "DEAD value" will not be calculated. Under this condition, please remove the cause of force or vibration and process it again.

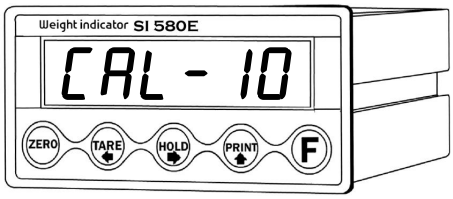
5-2-5. Input Test Weight value and Calculate SPAN value.



If "SPAN" is displayed, input "Test Weight" capacity and press F key.

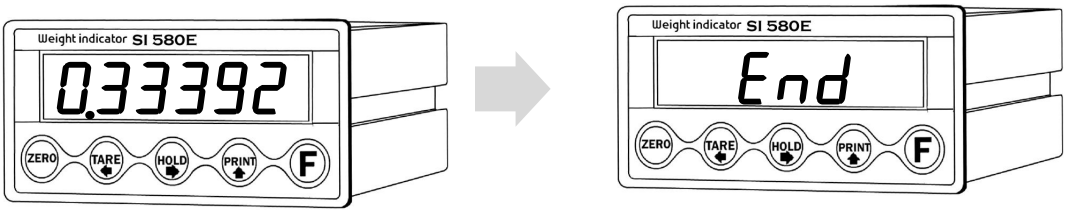


When "UP" is displayed, load your test weight on the scale (weigh bridge) and press F key.



Calculate Span value during 10 ~20 second, automatically.

※ To guarantee the preciseness, SPAN calculation (CAL00~CAL09) will be operated twice when resolution (Division value /Max capacity value) is less than 1/10,000.



After calculation, span value will be displayed on the display. Then press F key.
※This span value is not a weight value.

When "END" is displayed and calibration is completed.

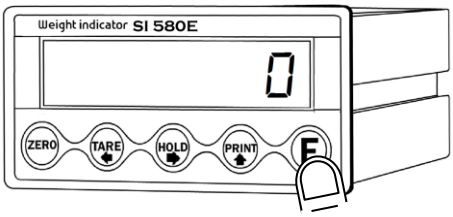
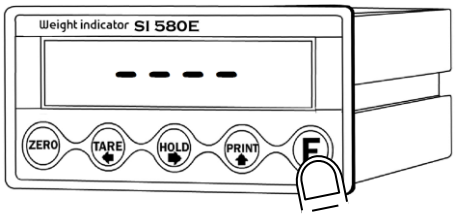
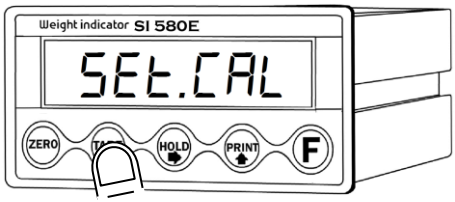
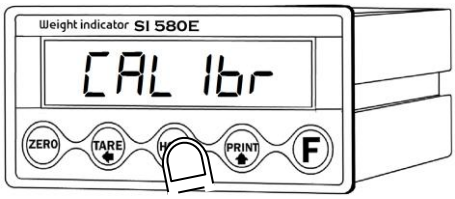
5-3. Simulation Calibration Mode(without Test weight)

With this "Simulation Calibration Mode" you can make simple calibration without any "TEST weight"

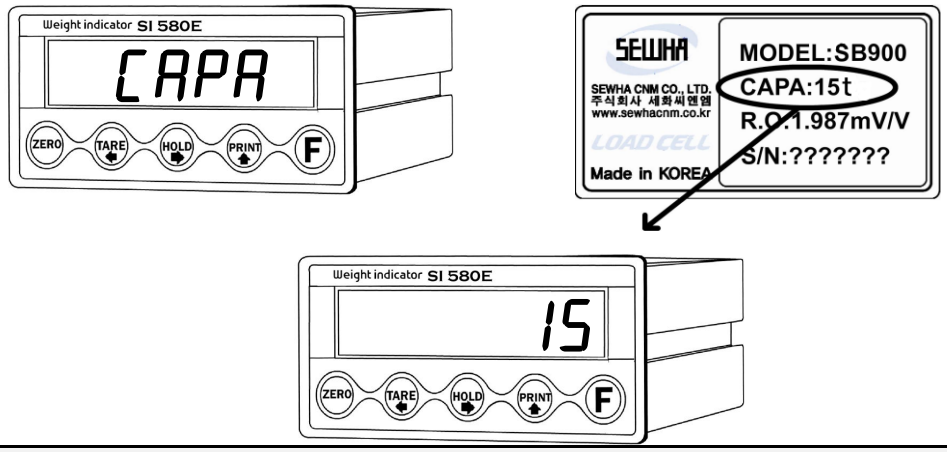
This calibration mode uses "Load cells' max capacity" and "Max Output Rate(mV)", so the weight adjustment degree might be less than "Test weight Calibration".

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

5-3-1. Simulation Calibration Mode Start

<table>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>On pressing F key by 4 second</td><td>On the screen "----", input PASSWORD
press F key</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>On the screen "SET.CAL" press TARE key</td><td>On the screen "CALIBR", press HOLD key
Go into CALIBRATION MODE</td></tr>
</table>

5-3-2. Setting “Capacity of Load Cell”



After “CAPA” is displayed, Check the max Capacity of your load cell.
(Refer the label on the load cell, or test report.)

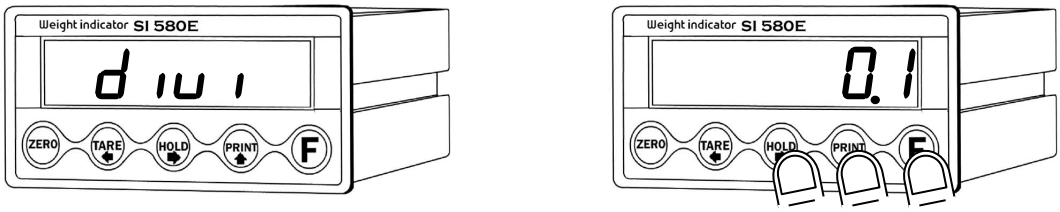
Input the Max Capacity of Load cell. And press F key.

Tip In case of multiple pieces of load cells are installed, make sum of each load cell’s capacity and make setting with max capacity.

Ex) If 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. Setting “Digit / Division” value



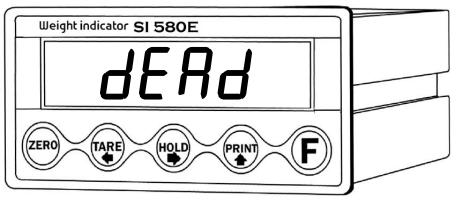
After “DIVI” is displayed, select Decimal point with HOLD key.

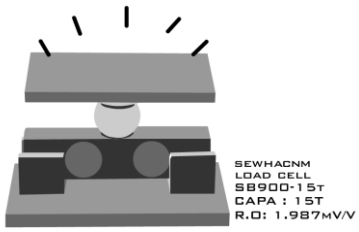
Whenever you press HOLD key, decimal point will be changed.

And select Division optimal division with PRINT key.

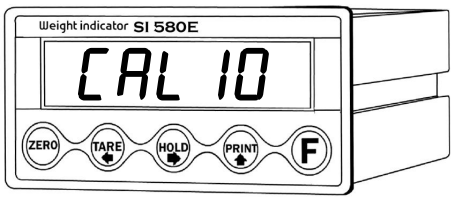
Finally press F key to save and move to next step.

5-3-4. Measure the “DEAD Weight” of Weighing Scale.





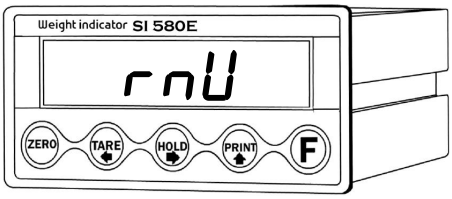
When “DEAD” is displayed, press F key with empty scale.
The indicator starts to measure and find optimal “Dead weight value of Scale” automatically..

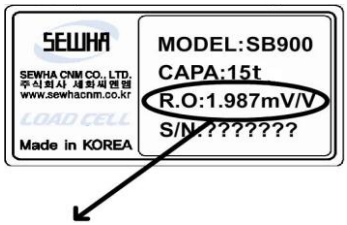


It takes 10 or 20 second to get the best situation.

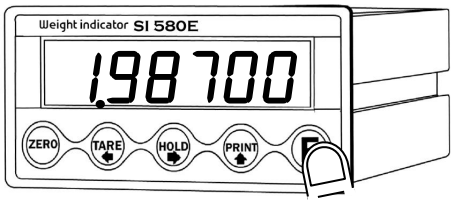
※ To guarantee the preciseness, DEAD weight calculation (CAL00~CAL09) will be operated twice when resolution (Division value /Max capacity value) is less than 1/10,000.

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



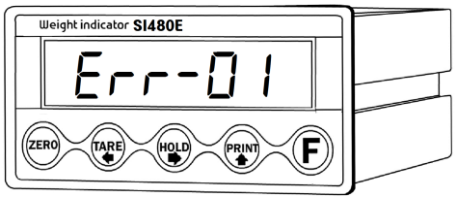


Input the output value load cell Following fixed decimal point.



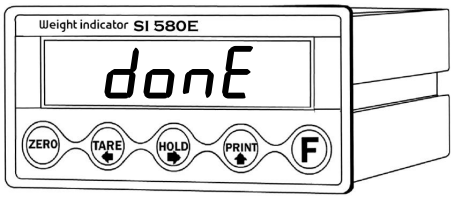
After “mV” is displayed, Check the Rated output value of Load cell.

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

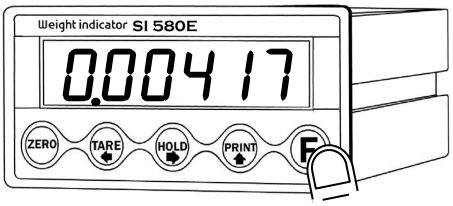


If input wrong value, there will display **"Err-01"**, please go back to *Setting "Capacity of Load Cell".* After recheck the label of load cell and retry the process.

When "mV" is displayed, input Load cell Rated Output (mV), referring the load cell label. And press F key to save.



After finishing calculation, calculated "Span value", "DONE" will be displayed.



Now, the Simulation Calibration is done, press F key to complete the calibration process.

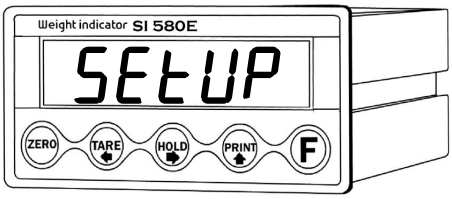
Tip In case of multiple pieces of load cells are connected, the rated output will be same as single load cell(Because plural load cells are connected with parallel connection, the sum of rated output voltage is same as single load cell's rated output)

※ 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.

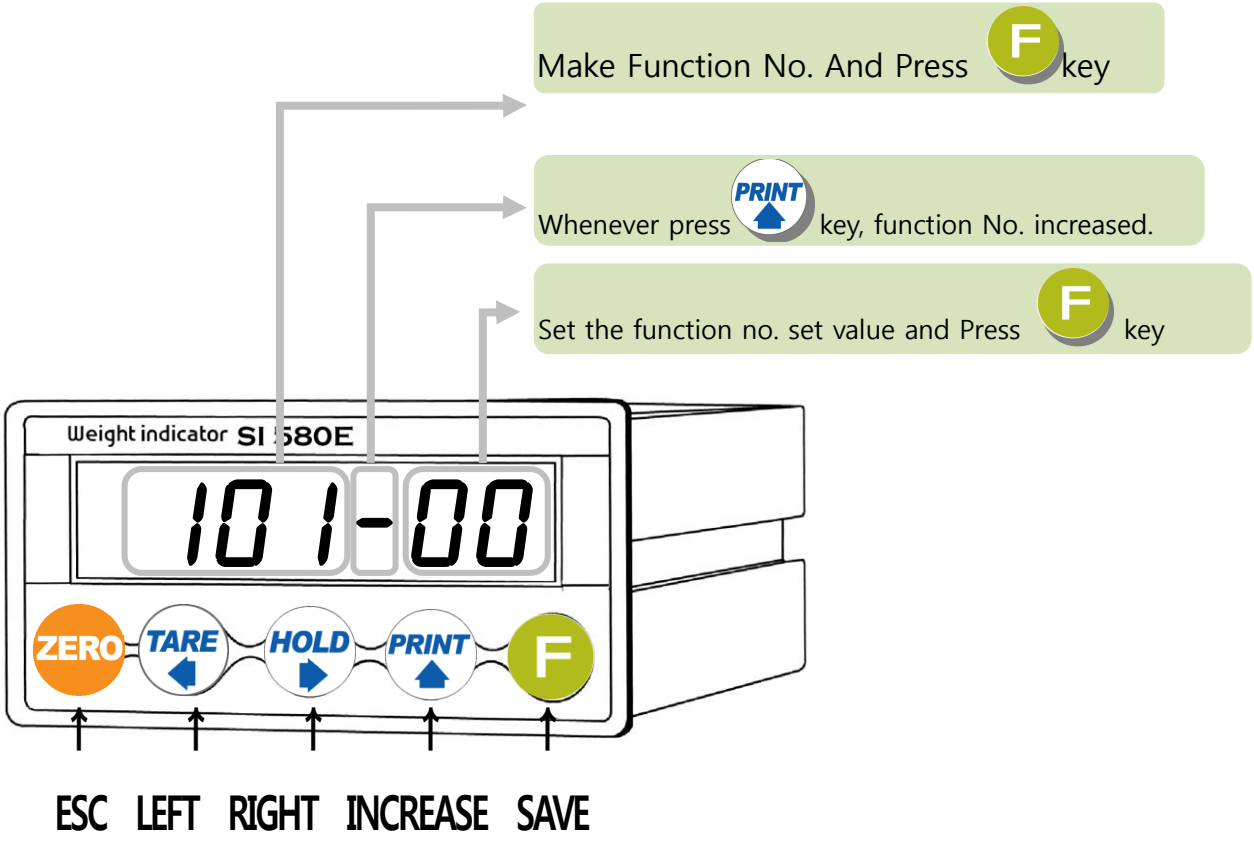
5-4. F-FUNCTION Setting

Set-up means set the F-function and make optimal operation of SI 580E controller.

■ Starting F-FUNCTION Mode



Press F key 4 times → Displaying "SETUP" press TARE key.



5-4-1 F-FUNCTION list(Summary)

F-list	Subject	Default	Contents
101	Equipment No. setting	**01**	01~99
102	Weight–Back up Mode	**02**	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) 03: Auto(At weighing process finish) 04: Manual& Auto(At every steady states) 05: Manual& Auto (At the first steady states) 06: Manual& Auto (At weighing process finish)
104	Display Up-Date Speed	**09**	01: Slow(1 time per 1 sec) ~ 09: Fast(60 times per 1 sec)
108	Buzzer sound (External input detection)	**00**	00: Buzzer sound, 01: No Buzzer sound
110	Weight Unit	**00**	00: kg, 01: g, 02: ton
111	Language for print bill	**00**	00: Korean, 01: English
201	EMPTY Range	**100**	00~999999
202	Auto Zero Range	**00**	01~99 (Unit: 0.25 gradation)
203	Steady Range	**08**	01~99 (Unit: 0.25 gradation)
204	Steady condition check time	**10**	01~99 (Unit: 0.1 sec)
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
207	Tare Key operation mode	**00**	00: Always active 01: Active under steady condition only

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: 1 sec)
213	Auto tare set when weighing starts	**00**	00: Disuse 01: Use
214	Tare Removal 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 Removal Time	**00**	00: Disuse 00 ~ 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: 1 sec.)
218	Hold Removal at the near zero	**00**	00: Disuse 01: Use
219	Auto Hold Removal Time	**00**	00: Disuse 01~10: Use (Unit: 1 sec)
220	Average Hold Time	**10**	01 ~ 99 (Unit: 0.1 sec)
221	Minus (-) Mark Display	**00**	00: Use 01: Disuse
222	Under UNPASS/OVERLOAD state, Weight display	**00**	00: Display 01: No display

223	**Weighing Mode**	**01**	00: Disuse 01: Limit Mode 1 02: Limit Mode 2 03: Limit Mode 3 04: Packer Mode 1 05: Packer Mode 2 06: Packer Mode 3 07: Accumulating Mode 1 08: 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: Near Zero 02: SP1 03: SP2 04: SP3 05: SP4
227	Relay Output 2 Setting	**00**	00: Disuse 01: Near Zero 02: SP1 03: SP2 04: SP3 05: SP4
228	Relay Output 3 Setting	**00**	00: Disuse 01: Near Zero 02: SP1 03: SP2 04: SP3 05: SP4
229	Relay Output 4 Setting	**00**	00: Disuse 01: Near Zero 02: SP1 03: SP2 04: SP3 05: SP4

233	External Input 1 Setting	**01**	00: Disuse 01: Zero 02: Tare 03: Tare removal 04: Tare/Tare removal 05: Hold 06: Hold removal 07: Hold/Hold removal 08: Start(Packer/Accumulating Mode) 09: Stop(Packer/Accumulating Mode) 10: Start/Stop(Packer/Accumulating Mode) 11: Print 12: Subtotal Print
234	External Input 2 Setting	**04**	00: Disuse 01: Zero 02: Tare 03: Tare removal 04: Tare/Tare removal 05: Hold 06: Hold removal 08: Start(Packer/Accumulating Mode) 09: Stop(Packer/Accumulating Mode) 10: Start/Stop(Packer/Accumulating Mode) 11: Print 12: Subtotal Print
235	External Input 3 Setting	**07**	00: Disuse 01: Zero 02: Tare 03: Tare removal 04: Tare/Tare removal 05: Hold 06: Hold removal 07: Hold/Hold removal 08: Start(Packer/Accumulating Mode) 09: Stop(Packer/Accumulating Mode) 10: Start/Stop(Packer/Accumulating Mode) 11: Print 12: Subtotal Print

236	External Input 4 Setting	**11**	00: Disuse 01: Zero 02: Tare 03: Tare removal 04: Tare/Tare removal 05: Hold 06: Hold removal 07: Hold/Hold removal 08: Start(Packer/Accumulating Mode) 09: Stop(Packer/Accumulating Mode) 10: Start/Stop(Packer/Accumulating Mode) 11: Print 12: Subtotal Print
239	Finish Relay Output Delay Time (T1)	**10**	00 ~ 99 (Unit: 0.1 sec)
240	Finish Relay Output Time (T2)	**10**	00 ~ 99 (Unit: 0.1 sec)
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
301	Parity / Stop bit	**00**	00: Data bit 8, Stop bit 1, Parity bit None 01: Data bit 8, Stop bit 1, Parity bit Odd 02: Data bit 8, Stop bit 1, Parity bit Even 03: Data bit 7, Stop bit 1, Parity bit Odd 04: Data bit 7, Stop bit 1, Parity bit 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 03: Modbus(RTU)

304	"Check-Sum" under command mode	**00**	00: Disuse, 01: Use
305	Data Format under Stream Mode	**00**	00: Format 1 01: Format 2 02: Format 3 03: Format 4
306	Date transference under stream mode	**00**	00: Continuously 01: Single time on every steady state 02: Single time(finish weighing process) 03: When input "PRINT" key
307	Modbus Transmit Data MSB/LSB location	**00**	00: Standard, 01: Change
308	Parity / Stop bit (Expansion Port)	**00**	00: Data bit8, Stop bit1, Parity bit None 01: Data bit8, Stop bit1, Parity bit Odd 02: Data bit8, Stop bit1, Parity bit Even 03: Data bit7, Stop bit1, Parity bit Odd 04: Data bit7, Stop bit1, Parity bit Even
309	Serial Communication Speed (Expansion 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
310	Data transmission mode(Extension Port)	**02**	00: Simplex / Stream Mode 01: Duplex / Command Mode 02: Print Mode
311	"Check-Sum" under command mode (Expansion Port)	**00**	00: Disuse 01: Use
312	Data Format under Stream (Expansion Port)	**00**	00: Format1 01: Format2 02: Format3 03: Format4

313	Date transference under stream mode (Expansion Port)	**00**	00: Continuously 01: Single time on every steady state 02: At the first steady point 03: Finish weighing process 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: 1 sec)
355	Paper Withdraw Rate setting (After Continuous/Single Print)	**00**	00~09 (Unit: 1 line add)
356	Paper Withdraw Rate setting (After SUB/GRAND Total Print)	**00**	00~09 (Unit: 1 line add)
358	Grand total data delete	**00**	00: Disuse 01: Use
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)

5-4-2 F-FUNCTION list(Detail)

("●" Factory default)

Equipment No. setting			
101	01	01 ~ 99	ID No. setting with No. key. (01~99 selectable)
Weighing Data Save Method selection			
102		00	Normal mode
		01	Weight Back up Mode(Zero)
	●	02	Weight Back up Mode(Zero&Tare)
Weighing Data Save Method			
103		00	Manual(Whenever "Print" key input)
		01	Auto(At every steady states)
		02	Auto(At the first steady states)
	●	03	Auto(At weighing process finish)
		04	Manual& Auto(At every steady states)
		05	Manual& Auto (At the first steady states)
		06	Manual& Auto(At weighing process finish)
Display Up-Date Speed			
104	09	01 ~ 09	01: Slow(1 time per 1 sec) ~ 09: Fast(60 times per 1 sec)
Buzzer sound (External input detection)			
108	●	00	Buzzer sound
		01	No Buzzer sound
Weight Unit			
110	●	00	kg
		01	g
		02	ton
Language for print bill			
111	●	00	KOREAN
		01	ENGLISH
EMPTY Range			
201	100	0 ~ 999999	You can set "EMPTY" Range.
Auto Zero Range			
202	00	00 ~ 99	Within the "Auto Zero" range, weighing part is steady, indicator will display current weight as "Zero" If the weighing part is not "Steady", indicator will display current weight. (Unit:0.25 gradation)

Steady Range			
203	08	01 ~ 99	During the set time period, estimate weighing part's "STEADY" condition and display. (Unit: 0.25 gradation)
"STEADY" condition check time			
204	10	01 ~ 99	During the set time period, estimate weighing part's "STEADY" condition and display. If you set small value, indicator will take "STEADY" fast, if you set value, indicator will take "STEADY" slow. (Unit: 0.1 sec)
Digital Filter			
205	20	01 ~ 99	01:Weak vibration ~ 99:Strong vibration
Zero key operation			
206	●	00	Always active
		01	Active under steady condition only
Tare Key operation			
207	●	00	Always active
		01	Active under steady condition only
Zero key Operation Range			
209		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 .
※ CAUTION: If setting over than 10%, The display weight could be over than Load cell input signal or Max Capacity and it may display "CELL-Err" or incorrect weight value. And It can be the cause of load cell damage.			
Tare key Operation Range			
210		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
Auto Zero function under Tare state			
211	●	00	Disuse
		01	Use

Tare Delay Time			
212	00	00 ~ 10	00: Disuse 01 ~ 10: Use(Unit: 1 sec)
Auto tare set when weighing starts			
213	●	00	Disuse
		01	Use
Tare Removal Timing			
214	●	00	Manual
		01	Auto at empty range
		02	Auto at steady condition
		03	Auto when finish relay out is off
Auto Tare Removal Time			
215	00	00 ~ 09	Set time to tare removal 00: Disuse 01 ~ 09: Use (Unit : 1 sec)
Hold mode			
216	●	00	Sample Hold: Hold current weight until "Hold Reset"
		01	Peak Hold: Measure Max weight value and hold on display.
		02	Average Hold: Hold average value
Hold delay time			
217	00	00 ~ 10	00: Disuse 01 ~ 10: Use(Unit: 1 sec)
Hold Removal at the near zero			
218	●	00	Disuse
		01	Use
Auto Hold Removal Time			
219	00	00 ~ 10	00: Disuse 01 ~ 10: Use(Unit: 1 sec)
Average Hold Time			
220	10	01 ~ 99	Unit: 0.1 sec
Minus (-) Mark Display			
221	●	00	Display
		01	No display
Under UNPASS/OVERLOAD state, Weight display			
222	●	00	Display
		01	No display

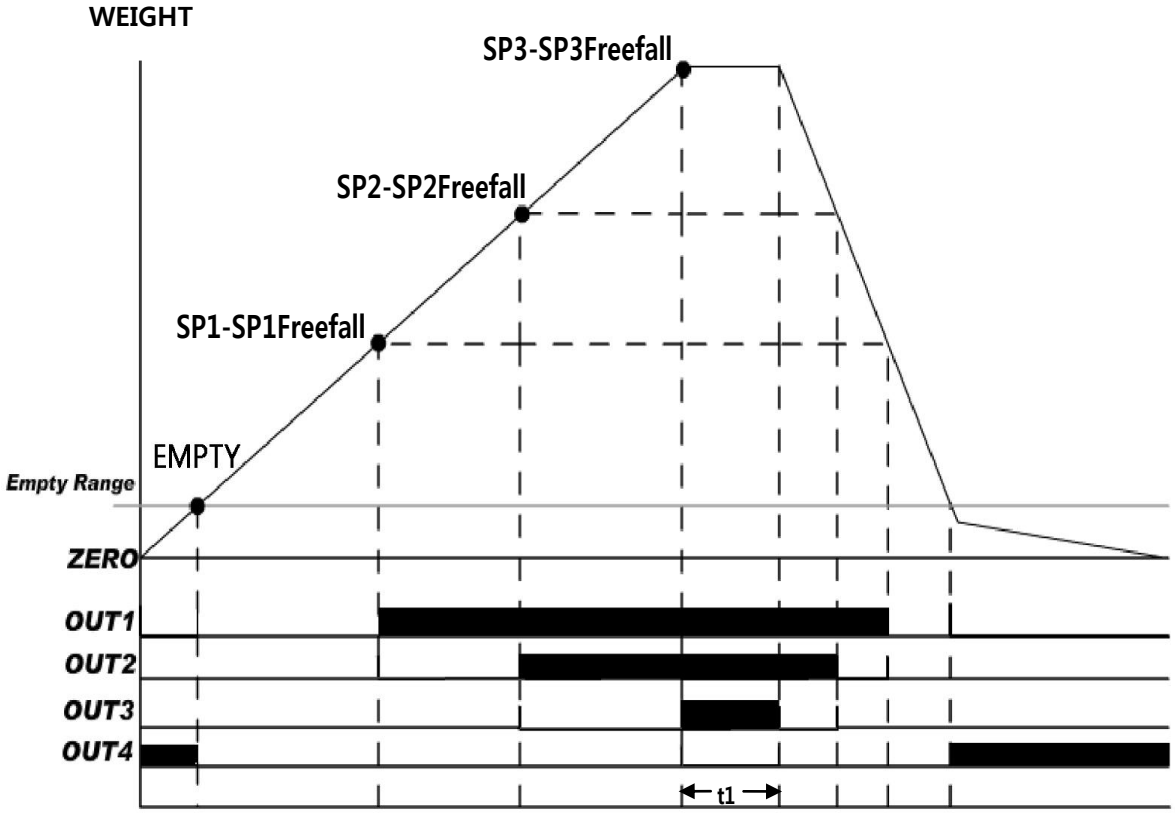
Weighing Mode Selection			
223		00	Disuse
	●	01	Limit Mode 1: SP1 / SP2 / SP3 / Empty Output Setting
		02	Limit Mode 2: SP1 / SP2 / SP3 / SP4 Output Setting "A" dry
		03	Limit Mode 3: SP1 / SP2 / SP3 / SP4 Output Setting "B" dry
		04	Packer Mode 1: Target / SP1 / Finish / Empty Output Setting
		05	Packer Mode 2: Target / SP2 / SP3 / Finish Output Setting
		06	Packer Mode 3: Target / SP2 / SP3 / Empty Output Setting
		07	Accumulating Mode1: SP1 / SP2 / SP3 / Finish Output setting
		08	Accumulating Mode2: SP1 / SP2 / SP3 / SP4 Output setting

◆ **Weighing Data Saving time point and print**

Weighing Data Save Method (F-function 103)		**Print input (Key, Comm., 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
04	Manual& Auto: At every steady states	○	Current weight	Current weight
		X	Steady weight	Steady weight
05	Manual& Auto: At the first steady states	○	Current weight	Current weight
		X	Steady weight	Steady weight
06	Manual / Auto : When weighing is finished	○	Current weight	Current weight
		X	Finish weight	Finish weight

◆ Weighing Mode 1 – Limit Mode 1 (F223 – 01)

– Relay "ON" when weight reaches set value



t1 set

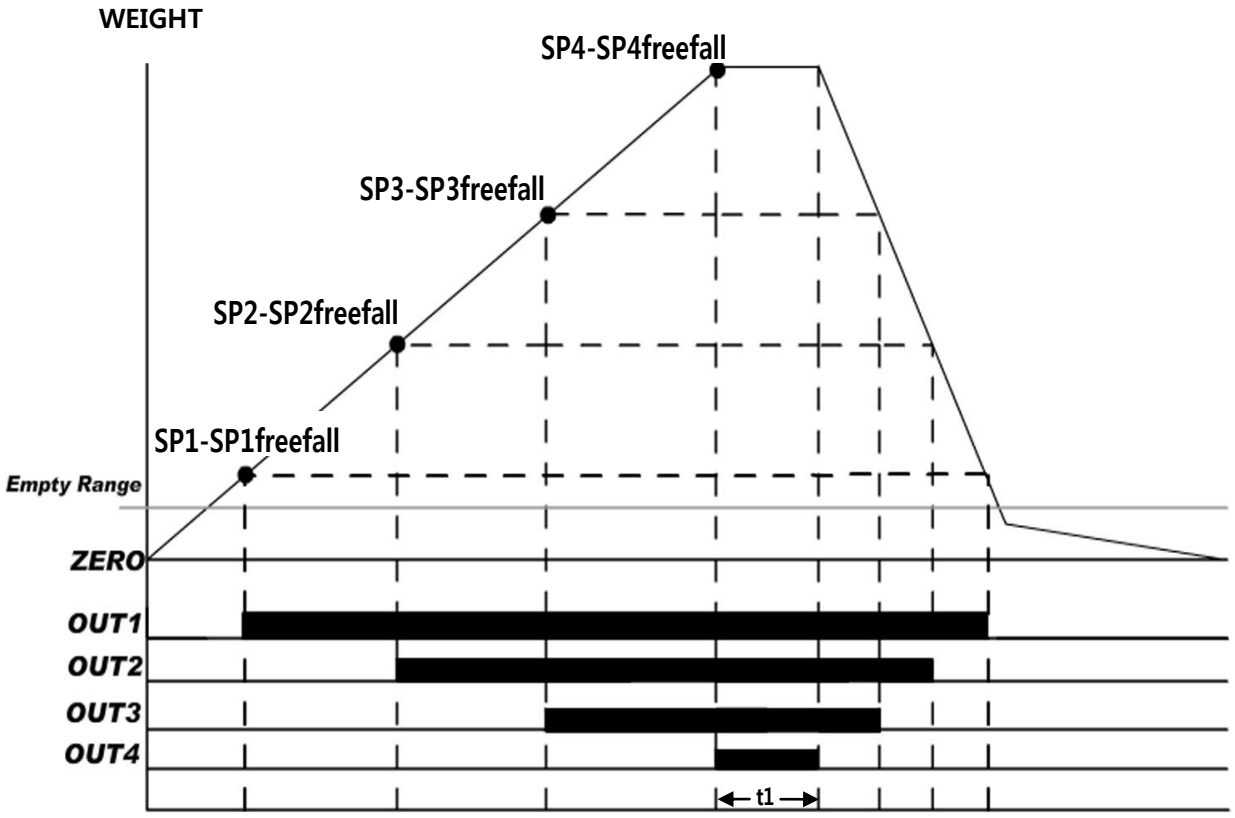
Time	Content
t1	Finish Relay Output Delay Time (F239) F103-3 or F103-6 set, after t1(time) weighing data to save

Relay Output

Relay	Contents	Relay	Contents
OUT 1	Current weight ≥ SP1-SP1 freefall(ON) Current weight < SP1-SP1 freefall (OFF)	**OUT 2**	Current weight ≥ SP2-SP2 freefall(ON) Current weight < SP2-SP2 freefall(OFF)
OUT 3	Current weight ≥ SP3-SP3 freefall(ON) Current weight < SP3-SP3 freefall(OFF)	**OUT 4**	Within "EMPTY" range "ON" (Refer F201)

◆ Weighing Mode 2 – Limit Mode 2 (F223 – 02)

– Relay "ON" when weight reaches set value. "A" dry



t1 set

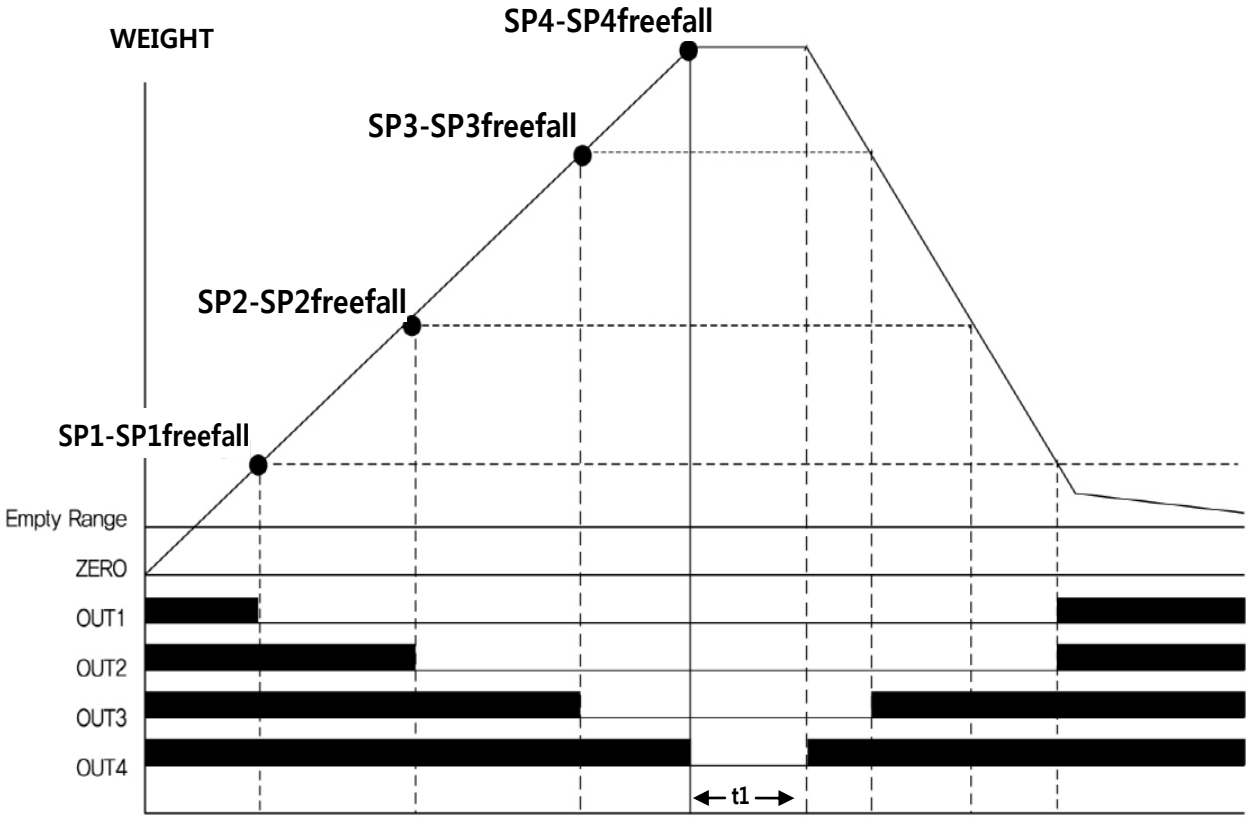
Time	Content
t1	Finish Relay Output Delay Time (F239) F103-3 or F103-6 set, after t1(time) weighing data to save

Relay Output

Relay	Contents	Relay	Contents
OUT 1	current weight ≥ SP1-SP1 freefall(ON) current weight < SP1-SP1 freefall(OFF)	**OUT 2**	current weight ≥ SP2-SP2 freefall(ON) current weight < SP2-SP2 freefall(OFF)
OUT 3	current weight ≥ SP3-SP3 freefall(ON) current weight < SP3-SP3 freefall(OFF)	**OUT 4**	current weight ≥ SP4-SP4 freefall(ON) current weight < SP4-SP4 freefall(OFF)

◆ Weighing Mode 3 – Limit Mode 3 (F223 – 03)

– Relay “ON” when weight reaches set value. “B” dry



t1 set

Time	Content
t1	Finish Relay Output Delay Time (F239) F103-3 or F103-6 set, after t1(time) weighing data to save

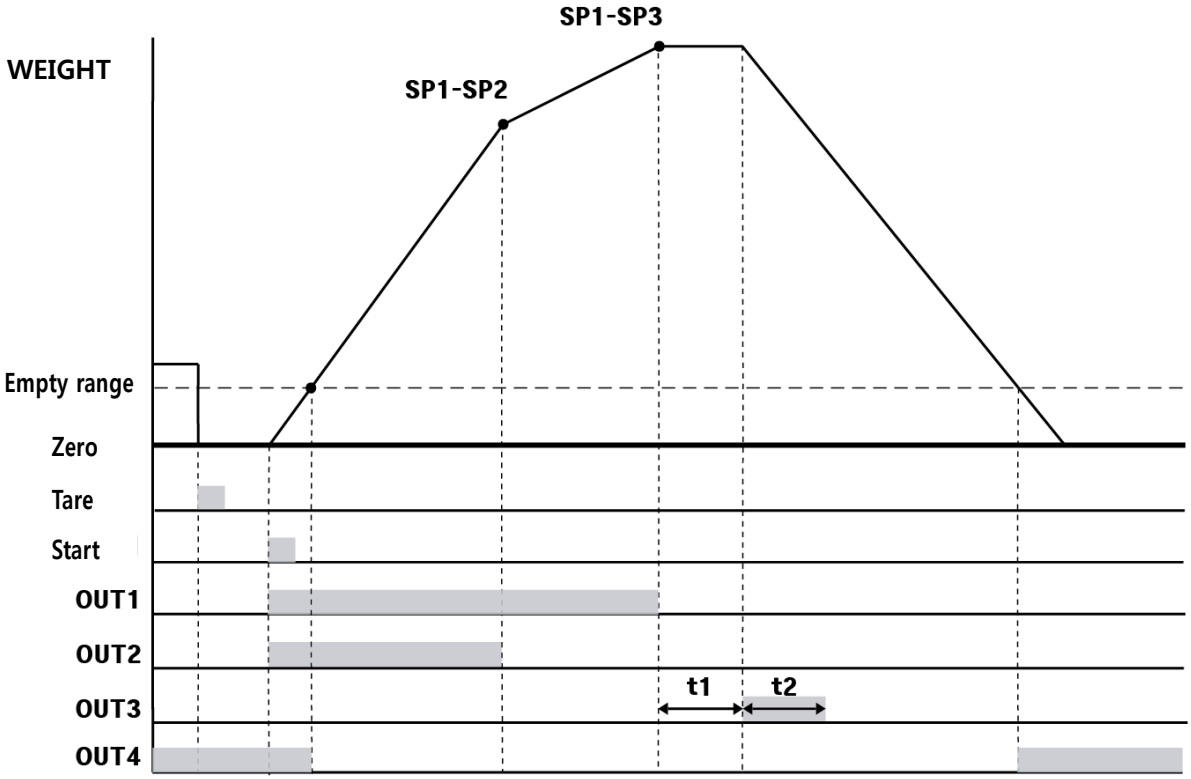
Relay Output

Relay	Contents	Relay	Contents
OUT 1	current weight < SP1-SP1 freefall(ON) current weight ≥ SP1-SP1 freefall(OFF)	**OUT 2**	current weight < SP2-SP2 freefall(ON) current weight ≥ SP2-SP2 freefall(OFF)
OUT 3	current weight < SP3-SP3 freefall(ON) current weight ≥ SP3-SP3 freefall(OFF)	**OUT 4**	current weight < SP4-SP4 freefall(ON) current weight ≥ SP4-SP4 freefall(OFF)

◆ Weighing Mode 4 - Packer Mode 1(F223 – 04) / 2 Step control

– Relay "ON" when weight reaches set value

- Relay "ON" Within "EMPTY" range



SP1, SP2, SP3 set

SP1	SP2	SP3
Target	Drib	Free fall

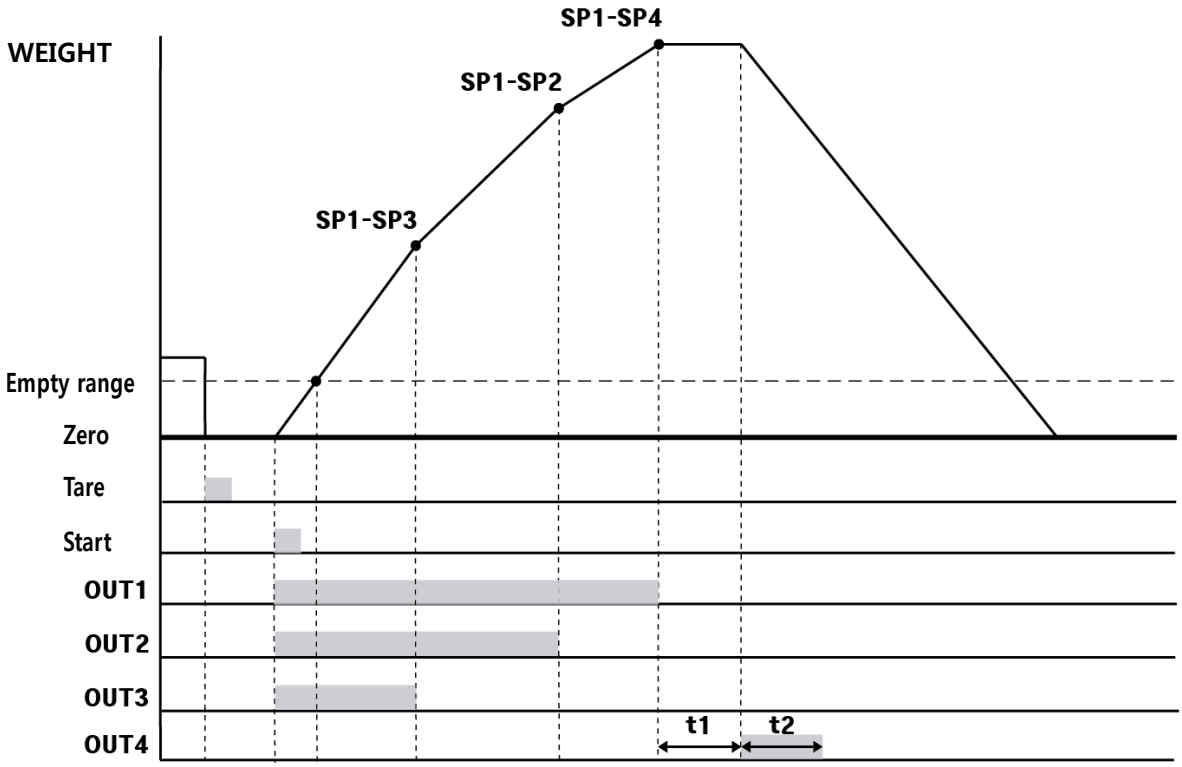
t1, t2 set

Time	Content
t1	Finish Relay Output Delay Time (F239) F103-3 or F103-6 set, after t1(time) weighing data to save
t2	Finish Relay Output Delay Time (F240)

Relay Output

Relay	Contents	Relay	Contents
OUT 1	"START"(ON) Current weight ≥ SP1-SP3(OFF)	**OUT 2**	"START"(ON) Current weight ≥ SP1-SP2(OFF)
OUT 3	Current weight ≥ SP1-SP3 After "t1" time, during "t2"(ON)	**OUT 4**	Within "EMPTY RANGE(F201) set(ON)

◆ Weighing Mode 5 – Packer Mode 2(F223 – 05) / 3 Steps control – Relay "ON" at finish point



SP1, SP2, SP3,SP4 set

SP1	SP2	SP3	SP4
Target	Drib	Bulk	Free fall

t1, t2 set

Time	Content
t1	Finish Relay Output Delay Time (F239) F103-3 or F103-6 set, after t1(time) weighing data to save
t2	Finish Relay Output Delay Time (F240)

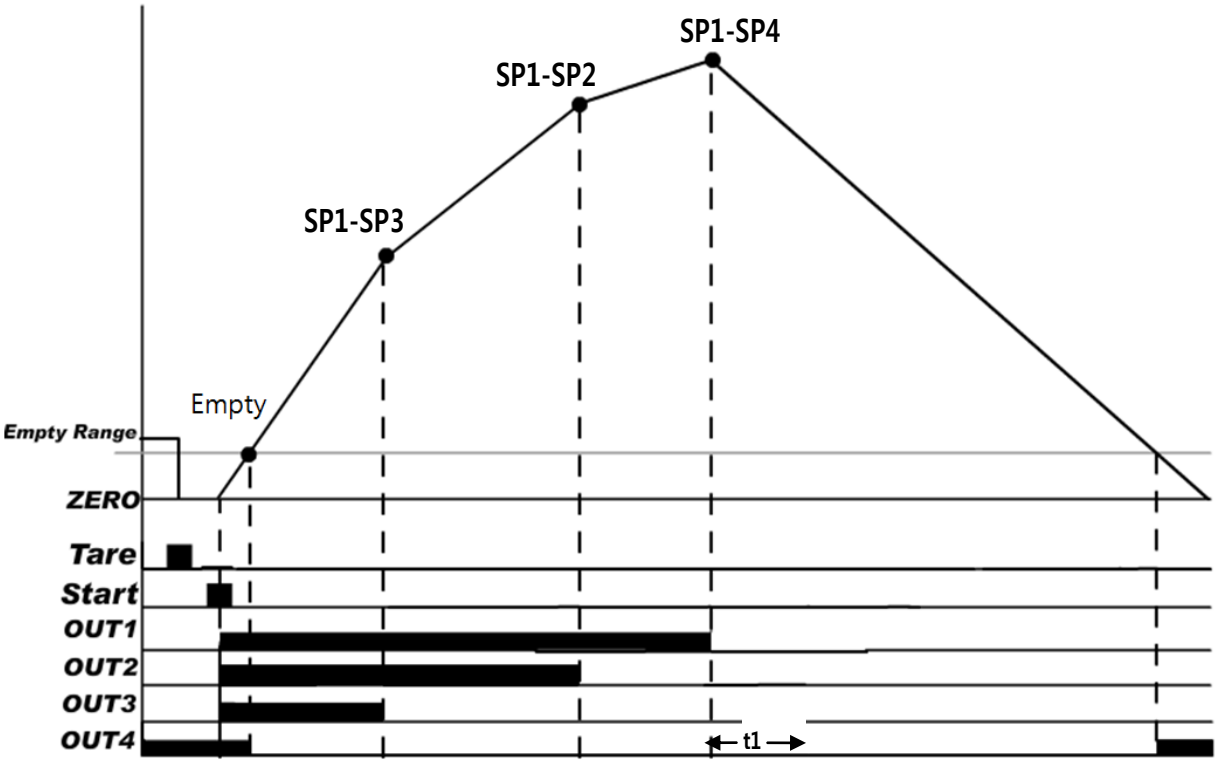
Relay Output

Relay	Contents	Relay	Contents
OUT 1	"START"(ON) Current weight ≥ SP1-SP3(OFF)	**OUT 2**	"START"(ON) Current weight ≥ SP1-SP2(OFF)
OUT 3	Current weight ≥ SP1-SP3 After "t1" time, during "t2"(ON)	**OUT 4**	Within "EMPTY RANGE(F201) set(ON)

◆ Weighing Mode 6 – Packer Mode 3(F223 – 06) / 3 Steps Control

- Relay "ON" at Empty range

WEIGHT



SP1, SP2, SP3,SP4 set

SP1	SP2	SP3	SP4
Target	Drib	Bulk	Free fall

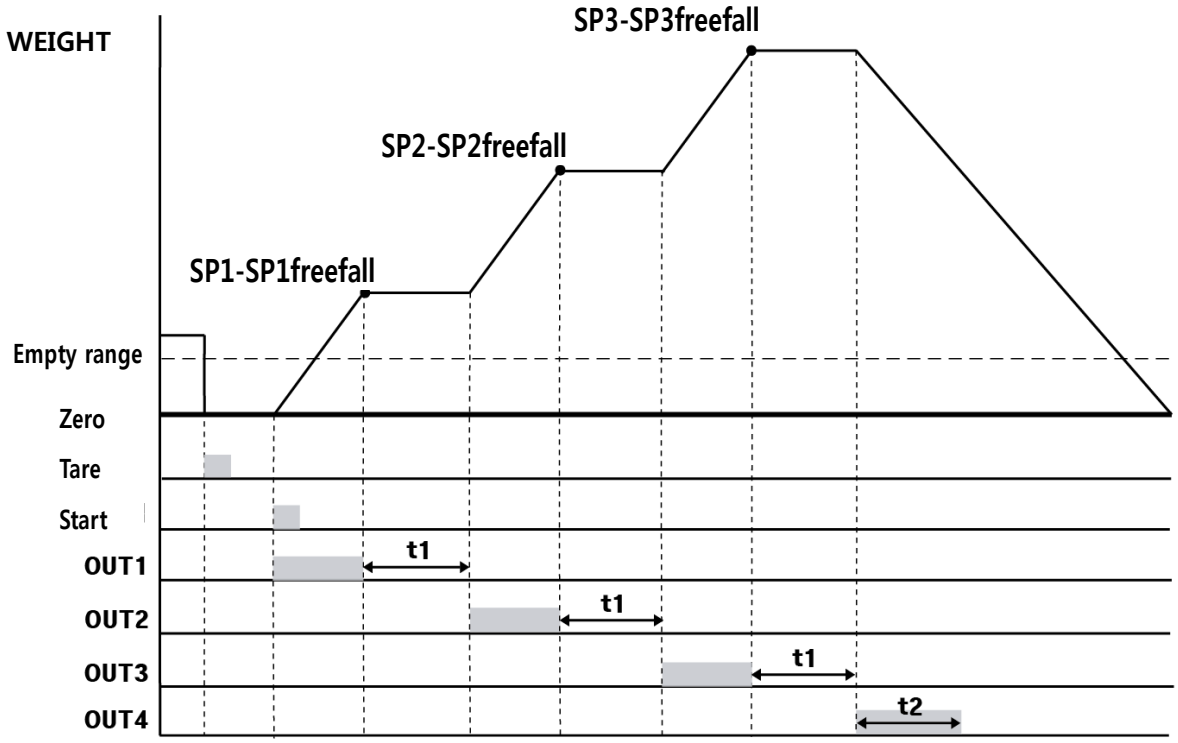
t1 set

Time	Content
t1	Finish Relay Output Delay Time (F239) F103-3 or F103-6 set, after t1(time) weighing data to save

Relay Output

Relay	Contents	Relay	Contents
OUT 1	"START"(ON) Current weight ≥ SP1-SP4(OFF)	**OUT 2**	"START"(ON) Current weight ≥ SP1-SP2(OFF)
OUT 3	"START"(ON) Current weight ≥ SP1-SP3(OFF)	**OUT 4**	Within "EMPTY RANGE(F201) set(ON)

◆ Weighing Mode 7 – Accumulating Mode 1 (F223 – 07)



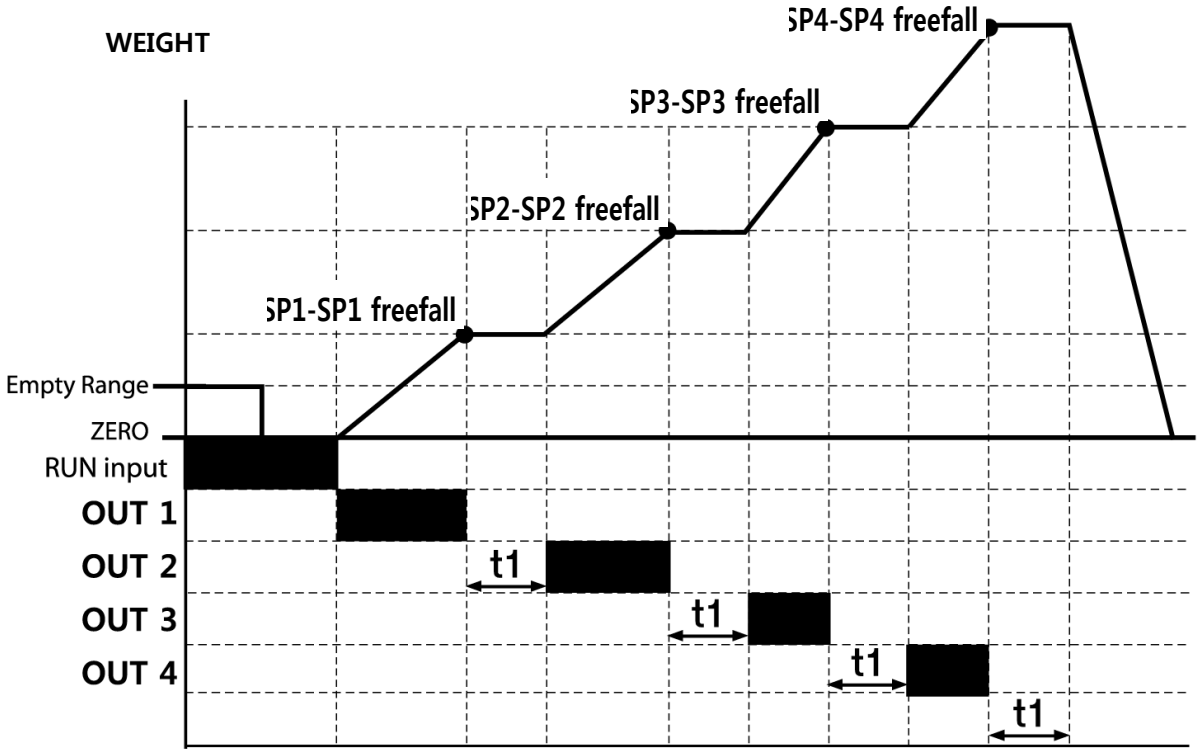
t1, t2 set

Time	Content
t1	Finish Relay Output Delay Time (F239) F103-3 or F103-6 set, after t1(time) weighing data to save
t2	Finish Relay Output Delay Time (F240)

Relay Output

Relay	Contents	Relay	Contents
OUT 1	"START"(ON) Current weight ≥ SP1-SP1freefall(OFF)	**OUT 2**	Current weight <SP2-SP2freefall(ON) Current weight ≥ SP2-SP2freefall(OFF)
OUT 3	Current weight < SP3-SP3freefall(ON) Current weight ≥ SP3-SP3freefall(OFF)	**OUT 4**	Current weight ≥ SP3-SP3freefall After "t1" time, during "t2"(ON)

◆ Weighing Mode 8 – Accumulating Mode 2 (F223 – 08)



t1 set

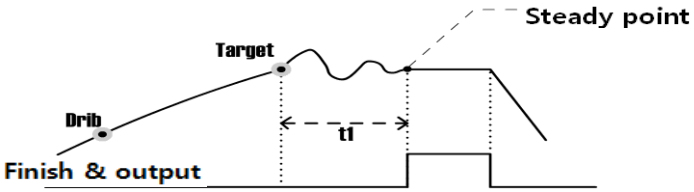
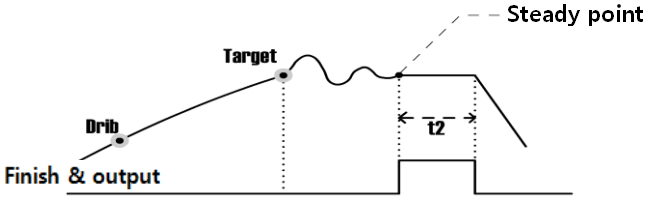
Time	Content
t1	Finish Relay Output Delay Time (F239) F103-3 or F103-6 set, after t1(time) weighing data to save

Relay Output

Relay	Contents	Relay	Contents
OUT 1	"START"(ON) Current weight ≥ SP1-SP1freefall(OFF)	**OUT 2**	Current weight < SP2-SP2freefall(ON) Current weight ≥ SP2-SP2freefall(OFF)
OUT 3	Current weight < SP3-SP3freefall(ON) Current weight ≥ SP3-SP3freefall(OFF)	**OUT 4**	Current weight < SP4-SP4freefall Current weight ≥ SP4-SP4freefall(OFF)

Relay Control Type						
224	●	00	Minus& Plus weight Control			
		01	Plus weight Control			
Relay Output Auto / Manual Setting						
225	●	00	Auto(Follow default)			
		01	Manual(User custom			
Relay Output 1 Setting						
226	●	00	Disuse		03	SP2
		01	Near zero		04	SP3
		02	SP1		05	SP4
Relay Output 2 Setting						
227	●	00	Disuse		03	SP2
		01	Near zero		04	SP3
		02	SP1		05	SP4
Relay Output 3 Setting						
228	●	00	Disuse		03	SP2
		01	Near zero		04	SP3
		02	SP1		05	SP4
Relay Output 4 Setting						
229	●	00	Disuse		03	SP2
		01	Near zero		04	SP3
		02	SP1		05	SP4
External Input 1 Setting						
233		00	Disuse		07	Hold/Hold removal
	●	01	Zero		08	Start(Packer/Accumulating Mode)
		02	Tare		09	Stop(Packer/Accumulating Mode)
		03	Tare removal		10	Start/Stop(Packer/Accumulating Mode)
		04	Tare/Tare removal		11	Print
		05	Hold		12	Subtotal print
		06	Hold/Hold removal			

External Input 2 Setting						
234		00	Disuse		07	Hold/Hold removal
		01	Zero		08	Start(Packer/Accumulating Mode)
		02	Tare		09	Stop(Packer/Accumulating Mode)
		03	Tare removal		10	Start/Stop(Packer/Accumulating Mode)
	●	04	Tare/Tare removal		11	Print
		05	Hold		12	Subtotal print
		06	Hold/Hold removal			
External Input 3 Setting						
235		00	Disuse	●	07	Hold/Hold removal
		01	Zero		08	Start(Packer/Accumulating Mode)
		02	Tare		09	Stop(Packer/Accumulating Mode)
		03	Tare removal		10	Start/Stop(Packer/Accumulating Mode)
		04	Tare/Tare removal		11	Print
		05	Hold		12	Subtotal print
		06	Hold/Hold removal			
External Input 4 Setting						
236		00	Disuse		07	Hold/Hold removal
		01	Zero		08	Start(Packer/Accumulating Mode)
		02	Tare		09	Stop(Packer/Accumulating Mode)
		03	Tare removal		10	Start/Stop(Packer/Accumulating Mode)
		04	Tare/Tare removal	●	11	Print
		05	Hold		12	Subtotal print
		06	Hold/Hold removal			

Finish Relay Output Delay Time (t1)					
239	10	00 ~ 99	Finish relay output delay time(Unit: 0.1 sec)  Ex) "00": SP4 reach then when stable active finish relay output "20": SP4 reach then after 2.0 second finish relay output "99": SP4 reach then after 9.9 second finish relay output		
Finish Relay Output Time (t2)					
240	10	00 ~ 99	Finish relay output time(Unit: 0.1 sec)  Ex) "00": Finish relay output under near zero "01": Finish relay output by 0.1 second "20": Finish relay output by 2.0 second		
Zero state lamp output standard					
251	●	00	Near Zero		
		01	Zero		
Near zero output Setting Under tare ON state					
253	●	00	Zero Output		
		01	Actual zero output except Tare weight		
Parity / Stop bit					
301	●	00	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Non)
		01	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Odd)
		02	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Even)
		03	DATA Bit (7 Bit)	STOP Bit (1 Bit)	Parity Bit (Odd)
		04	DATA Bit (7 Bit)	STOP Bit (1 Bit)	Parity Bit (Even)

Serial Communication Speed selection			
302		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
DATA transference Method selection			
303	●	00	Simplex Mode / Stream Mode
		01	Duplex Mode / Command Mode
		02	Print Mode
		03	MODBUS(RTU)
Command mode "Check Sum" detection selection (F303-01)			
304	●	00	Disuse
		01	Use
Stream mode DATA Transference Format selection (Refer chapter 6-1-4)			
305	●	00	Format 1 (19byte)
		01	Format 2 (22byte)
		02	Format 3 (17byte)
		03	Format 4 (22byte)
Stream mode Data transference			
306	●	00	Continuously
		01	Single time on every steady state
		02	At the first steady point
		03	Single time(when finish weighing process)
		04	When input "PRINT" key
Modbus Transmit Data MSB/LSB location			
307	●	00	Standard
		01	Change

Parity / Stop bit (Expansion Port)					
308	●	00	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Non)
		01	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Odd)
		02	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Even)
		03	DATA Bit (7 Bit)	STOP Bit (1 Bit)	Parity Bit (Odd)
		04	DATA Bit (7 Bit)	STOP Bit (1 Bit)	Parity Bit (Even)
Serial Communication Speed selection(Expansion Port)					
309		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		
Data transmission mode(Expansion Port)					
310		00	Simplex Mode / Stream Mode		
		01	Duplex Mode / Command Mode		
	●	02	Print Mode		
Command mode "Check-Sum" detection selection (Expansion Port / F310-01)					
311	●	00	Disuse		
		01	Use		
Stream mode DATA Transference Format selection (Expansion Port / Refer chapter 6-1-4)					
312	●	00	Format 1 (19byte)		
		01	Format 2 (22byte)		
		02	Format 3 (17byte)		
		03	Format 4 (22byte)		
Stream mode Data transference(Expansion Port)					
313	●	00	Continuously		
		01	Single time on every steady state		
		02	At the first steady point		
		03	Single time(when finish weighing process)		
		04	When input "PRINT" key		

Print Format			
352	●	00	Continuous Print
		01	Single Print
Print Output Delay Time			
354	00	00 ~ 09	Unit: 1 sec
Paper Withdraw Rate setting(After Continuous/Single Print)			
355	00	00 ~ 09	Unit: 1 line add
Paper Withdraw Rate setting(After SUB/GRAND Total Print)			
356	00	00 ~ 09	Unit: 1 line add
Grand total data delete			
358	●	00	Disuse
		01	Use
Analog Output Applying Weight Range			
401	●	00	Absolute number(-&+)
		01	Positive number(only +)
Analog Output Direction			
402	●	00	Forward
		01	Reverse
Analog Output Standard			
403	●	00	Max Capacity : 20mA or 10V will be output
		01	SP1 set point : 20mA or 10V will be output
		02	SP2 set point : 20mA or 10V will be output
		03	SP3 set point : 20mA or 10V will be output
		04	SP4 set point : 20mA or 10V will be output
		05	GROSS value = Max Capacity(When "TARE" GROSS value): 20mA or 10V

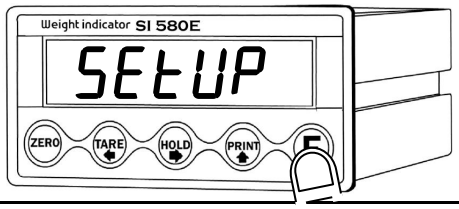
5-4-3. Hidden Option

How to enter Hidden function setting mode : Press F Key during 4sec and input your password. Default password is TARE TARE TARE TARE (**1111**). Press F key after input your password. Then show **"SET.CAL"** on the screen press "HOLD" key.

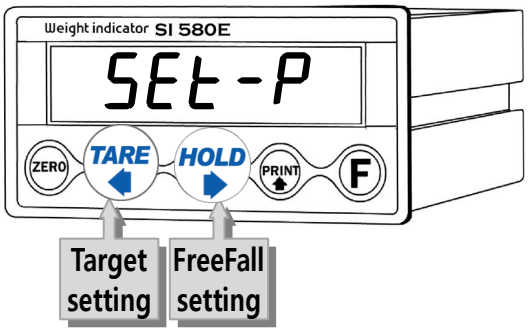
F-LIST	Subject	Default	Contents
HF01	Serial Number Check	-	-
HF03	S/W Version Check	-	Program version check
HF04	H/W Version Check	-	-
HF05	DATE(Y,M,D) Check	-	Able to modify
HF06	TIME(H,M,S) Check	-	Able to modify
HF07	Password Setting (4 digit)	-	1:TARE Key 2:HOLD Key 3:PRINT Key (Password combination within 1~3)
HF08	Maximum Capacity Weight Check	-	Able to modify
HF13	Analog Output select	**00**	00:4-20mA Output 01:0-10V Output
HF14	Minimum Analog Output Setting	**00**	Input Range: -20 ~ +20, *Tare key for minus(-) value
HF15	Maximum Analog Output Setting	**00**	Input Range:-20 ~ + 20 Tare key for minus(-) value
HF19	Function List Factory Reset	-	Change to default F-setting

5-5. SET-POINT Setting

(Each Control Relay Set point Value setting- Refer 21)



Input F key for times → Displaying "SETUP"→ Input F key

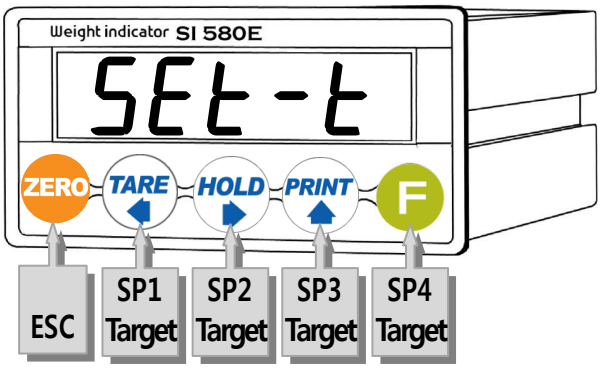


When displaying "SET-P"

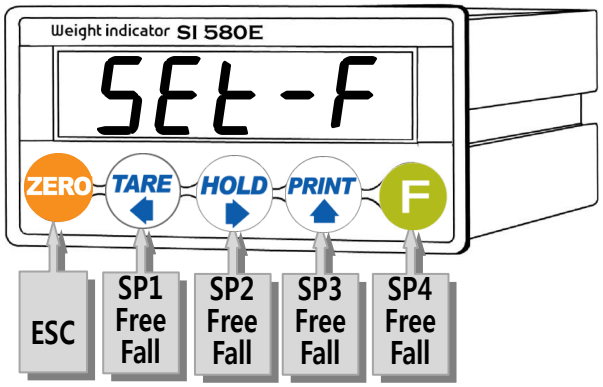
Press TARE key to enter Target setting mode

Press HOLD key to enter FreeFall setting mode

5-5-1. TARGET setting



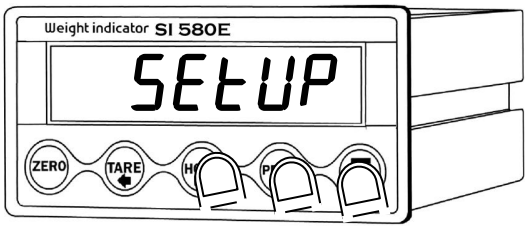
5-5-1. Free Fall setting



- Free fall setting mode can be set only weighing mode **F21 -1, F21-2, F21-6, F21-7, F21-8.**
- **Free fall value < Target value, If you set wrongly," Err-8" shows.**
- **Default Free fall value is "0".**
- ZERO **key means ESC/going to previous step ,** F **key means SAVE.**

5-6. Test Mode

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



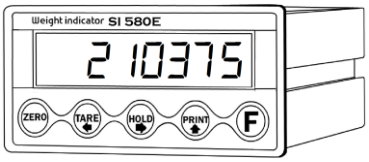
Press F key **4 times → On the screen "SETUP"**

- **Test mode 1:** Press HOLD key
- **Test mode 2:** Press PRINT key
- **Cancel / Go back:** Press ZERO key.

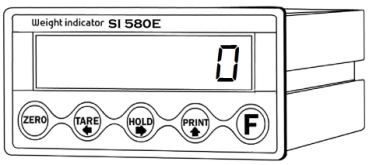
TEST MODE 1				
ZERO	TARE	HOLD	PRINT	F
ESC / BACK	Analog Deviation Check Mode	Display Check Mode	Key Check Mode	Analog output Check mode
TEST MODE 2				
ZERO	TARE	HOLD	PRINT	F
ESC / BACK	External input Check Mode	Relay output Check Mode	Standard Serial I/F Check Mode	Extended Serial I/F Check Mode

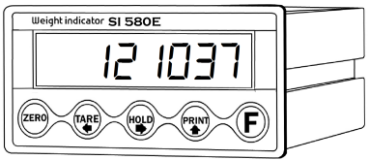
Tip If there is no change although pressing keys or loading some force on/in weighing part, it may something wrong with load cell, cable, connector or A/D board

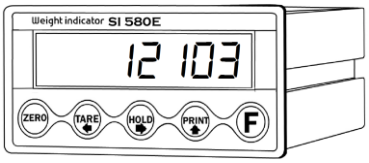
5-6-1. Analogue Deviation Check Mode



You can check the deviation of analog value.





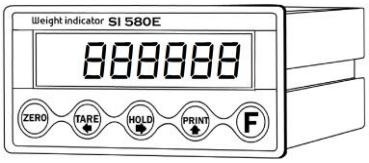


TARE **Display current analog value to '0'**

HOLD **Display from 1 million unit**

PRINT **Display from ten million unit**

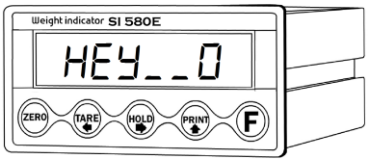
5-6-2. Display check mode



Test FND and LED

Blink FND and LED by 1 Segment gradually.

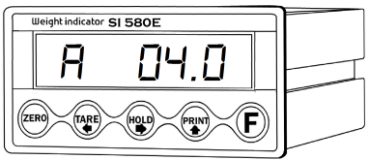
5-6-3. Key check mode



Press each key on the screen show

"1", "2", "3", "4", "5"

5-6-4. Analog Output 4~20mA, 0~10V check mode



Simulate output 0(4mV,0V) ~ 20(20mV,10V) to test

Press TARE minimum and maximum output in two step

4~20mA: On the screen "A"

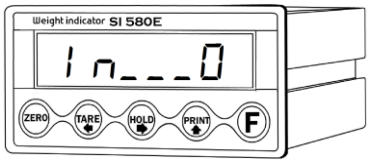
0~10V: On the screen "V"

Press TARE HOLD PRINT check critical raw data of Analog

EX) On the screen input **4.0 → 4mA output,** input **20.0 → 20mA output**

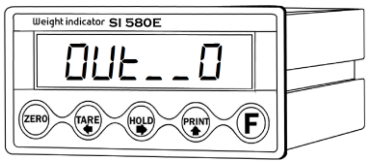
On the screen input **4.7 → 4.7V output,** input **10.0 → 10V output**

5-6-5. External input check mode



Connect external input on the screen show "1", "2", "3", "4".

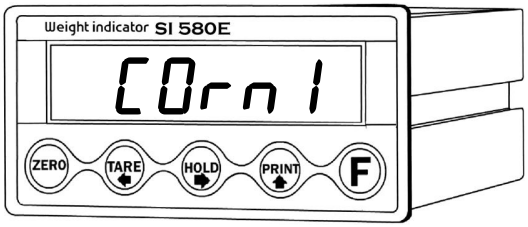
5-6-6. Relay output check mode



Output Relay "1", "2, "3", "4" gradually

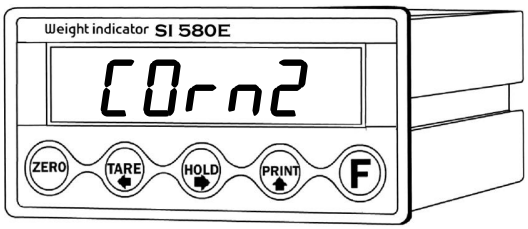
(Don't connect any device with relay output terminal.)

5-6-7. Standard Serial Interface Test Mode.



Connect with PC or other devices through serial interface and check the transference and receipt. At the normal operation, display will be blinked.

5-6-8. Expanded Serial Interface Test Mode.



Connect with PC or other devices through serial interface and check the transference and receipt. At the normal operation, display will be blinked.

To test this mode, please use "TESTING Protocol".

※ TESTING PROTOCOL

- Format: STX Id No. TEST ETX

STX	0	1	T	E	S	T	ETX
02h	30h	31h	54h	45h	53h	54h	03h

8 Byte

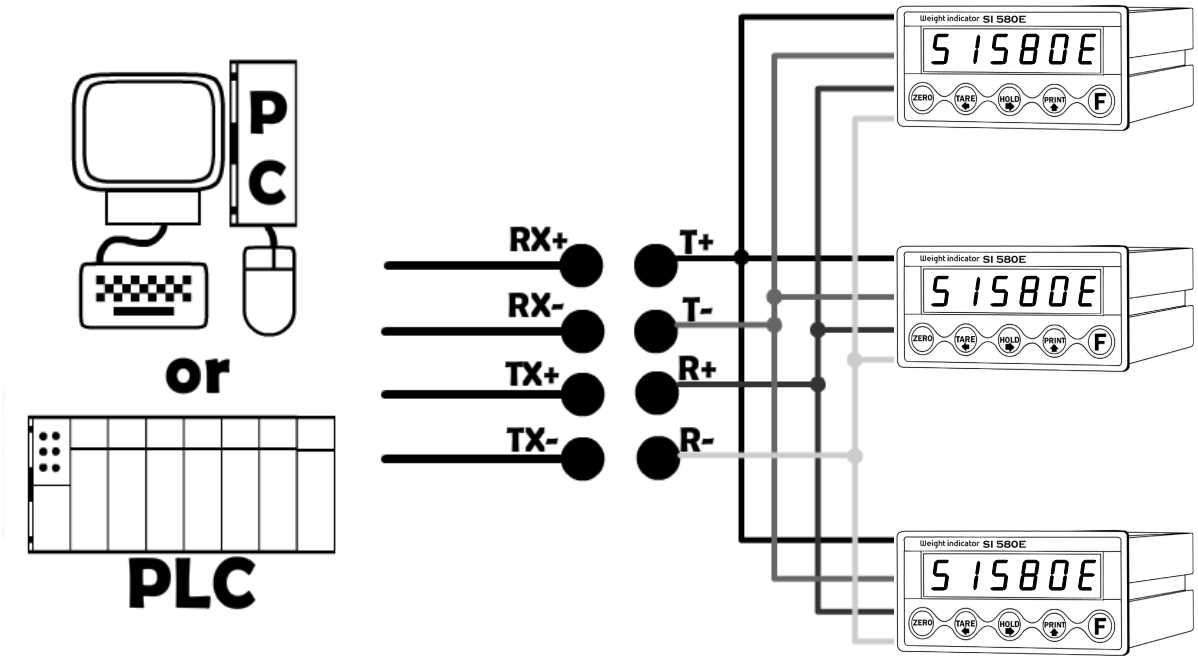
Caution

You cannot test Standard and Extended Serial Interface at the same time.

※ If you send "Testing protocol" from PC to Indicator, at the normal operation Display will blink.

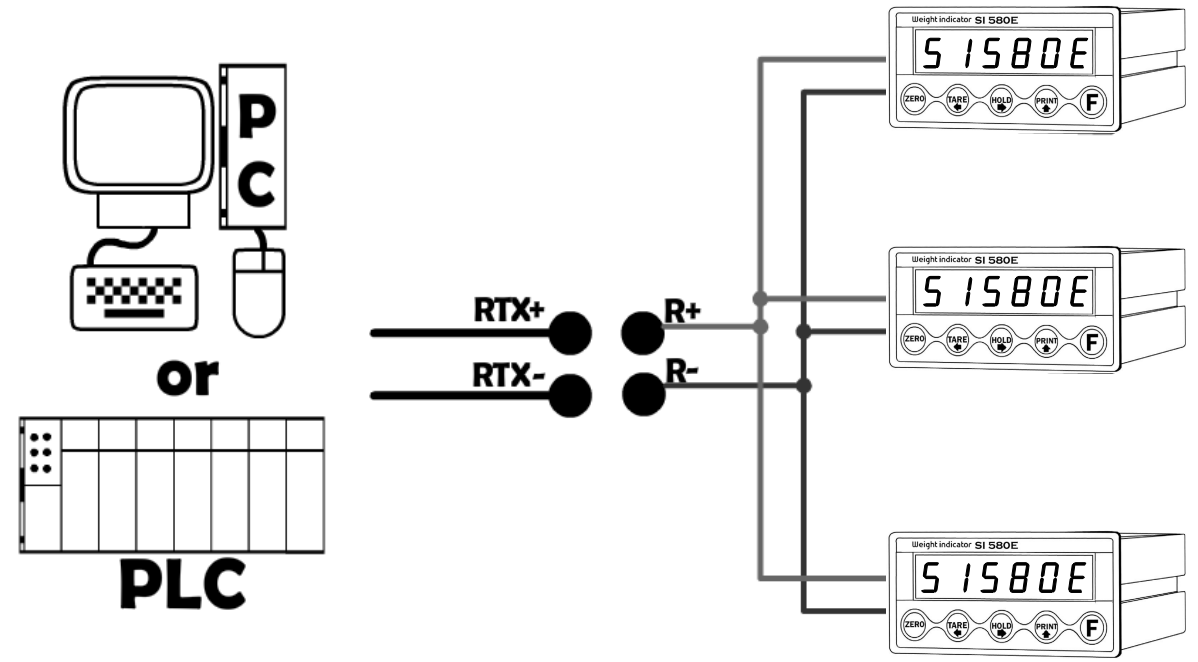
6. INTERFACE

6-1-1. Serial Interface (RS – 422)



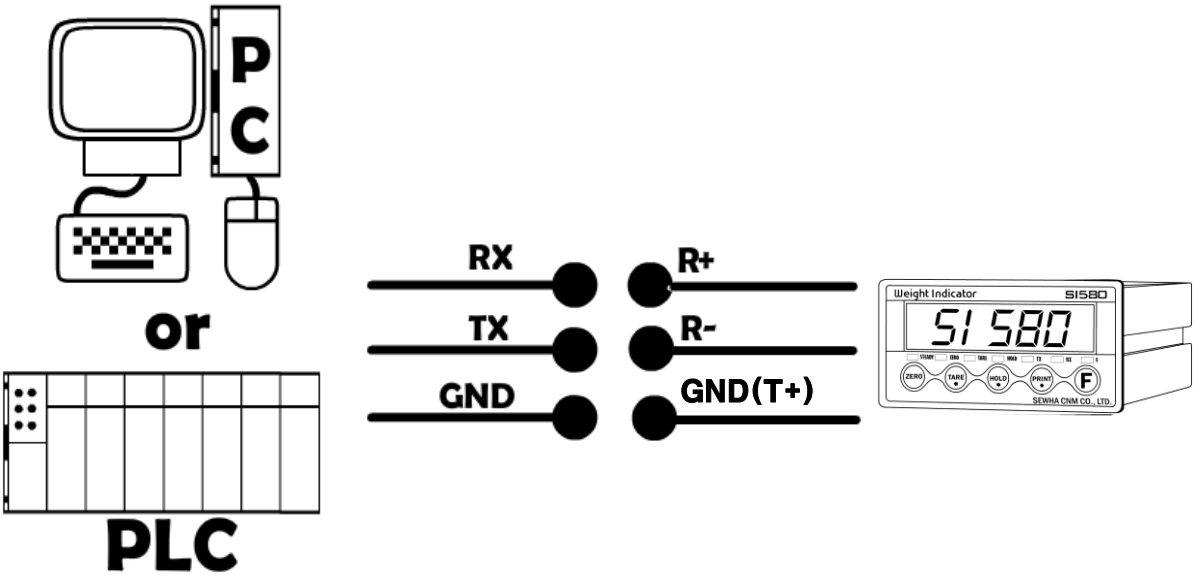
32 pcs of Indicators are connectable.

6-1-2. Serial Interface (RS – 485)



32 pcs of Indicators are connectable.

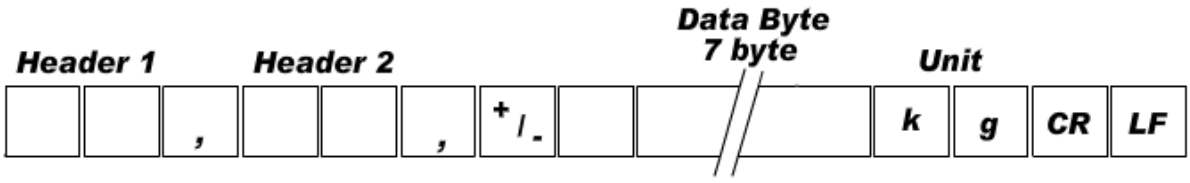
6-1-3. Serial Interface (RS – 232)



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.

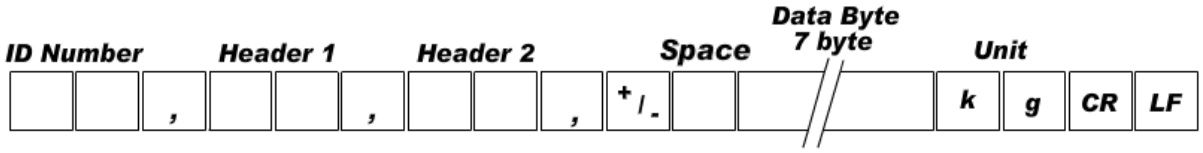
6-1-4. Data Format

1. Format 1: ID Number is not be transferred.(Refer F305-00 / 19 byte)



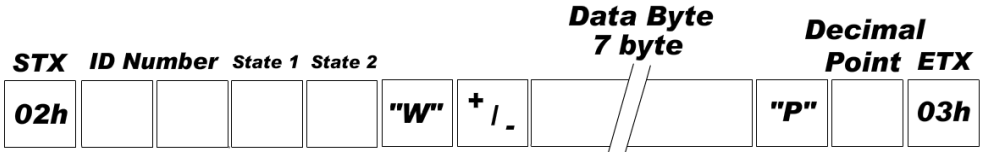
Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : Stable	GS : when setting TARE
US : Unstable	

2. Format 2: ID Number + Data Transference (Refer F305-01 / 22 byte)



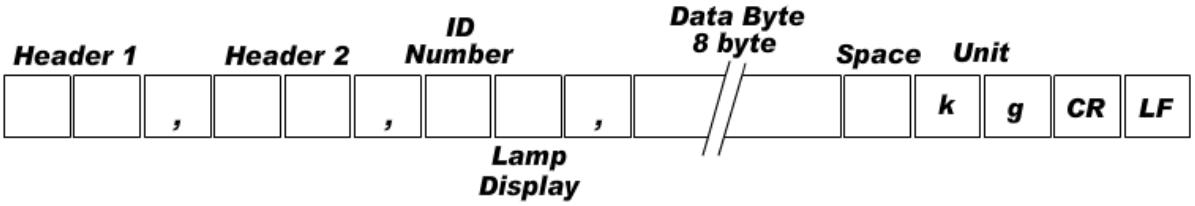
Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : Stable	GS : when setting TARE
US : Unstable	

3. Format 3: ID Number + State (Refer F305-02 / 17 byte)



State 1	State 2
O : OVER	G : Gross weight
S : STEADY	N : Net weight
U : UNSTABLE	

4. Format 4: Refer F305-03 / 22 byte



LAMP DISPLAY

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	0	1	1	1	1	1	1
1	STABLE	1	Hold	Print	Gross Weight	TARE	ZERO

Header1	Header2
OL : OVER LOAD	NT : GROSS weight
ST : Stable	GS : Net weight
US : Unstable	

6-1-5. 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		

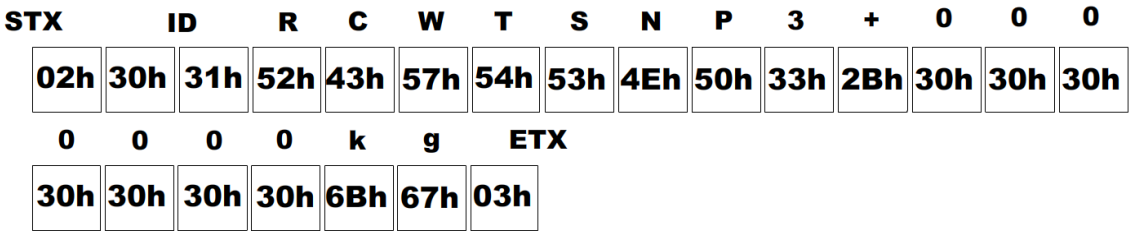
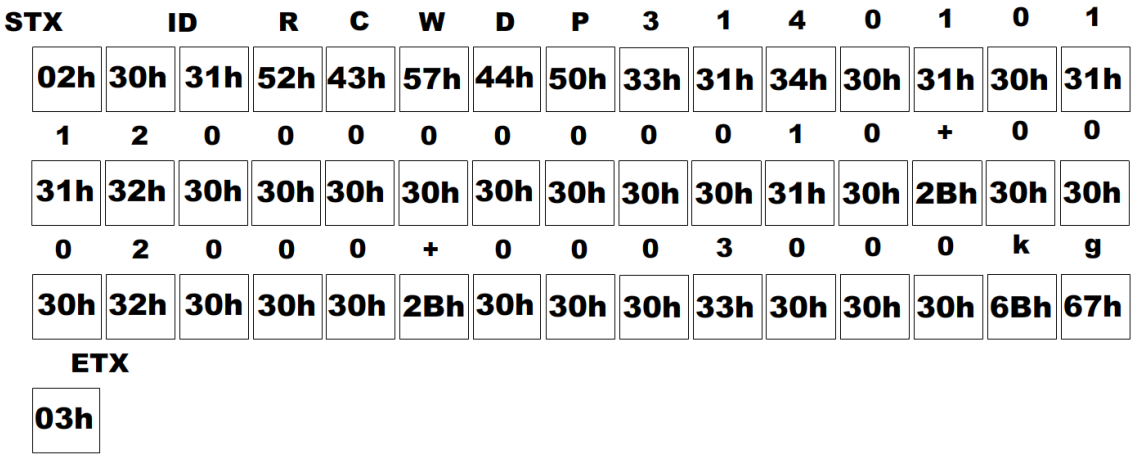
6-1-6. Read Command

Subject	Command	Length of transmission data
Current Weight	**STX ID RCWT ETX**	**22 byte**
Current data	**STX ID RCWD ETX**	**46 byte**
Grand total data	**STX ID RGRD ETX**	**28 byte**
Weighing completion value	**STX ID RFIN ETX**	**18 byte**
Current date data	**STX ID RDAT ETX**	**14 byte**
Current time data	**STX ID RTIM ETX**	**14 byte**
Tare weight	**STX ID RTAR ETX**	**18 byte**
SP1	**STX ID RSP1 ETX**	**17 byte**
SP2	**STX ID RSP2 ETX**	**17 byte**
SP3	**STX ID RSP3 ETX**	**17 byte**
SP4	**STX ID RSP4 ETX**	**17 byte**
SP1, SP2, SP3, SP4	**STX ID RSPA ETX**	**38 byte**
Current weight, Input, Output state	**STX ID RWRS ETX**	**26 byte**

6-1-7. Write Command

Subject	Command	Length of transmission data
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
Grand total Print	STX ID WGPR 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
Date setting	STX ID WDAT DATE (YYMMDD) ETX	14 byte
Time setting	STX ID WTIM TIME (HHMMSS) ETX	14 byte
SP1	STX ID WSP1 SP1 value ETX	15 byte
SP2	STX ID WSP2 SP2 value ETX	15 byte
SP3	STX ID WSP3 SP3 value ETX	15 byte
SP4	STX ID WSP4 SP4 value ETX	15 byte
SP1, SP2, SP3, SP4	STX ID WSPA SP1, SP2, SP3, SP4 value ETX	36 byte

6-1-8. Read Command Detail

<table>
<tr><th colspan="2">Current Weight</th></tr>
<tr><td>ASCII : STX ID(2byte) RCWT ETX</td><td>HEX : 02 30 31 52 43 57 54 03</td></tr>
<tr><td rowspan="2">Response</td><td>STX ID RCWT State1(1byte) State2(1byte) P decimal point(1byte) +/-(1byte) Current weight(7byte) Weight unit(2byte) ETX</td></tr>
<tr><td>State1 : O(Over Load) , S(Steady), U(Unsteady)
State2 : N(Net weight), G(Gross weight)</td></tr>
<tr><td colspan="2">Ex) Steady(S), TARE not used(N), 0.000kg
 
</td></tr>
<tr><th colspan="2">Indicator memory data</th></tr>
<tr><td>ASCII : STX ID(2byte) RCWD ETX</td><td>HEX : 02 30 31 52 43 57 44 03</td></tr>
<tr><td>Response</td><td>STX ID RCWD P decimal point(1byte) date(6byte) Time(6byte) No. of weighing(6byte) +/-(1byte) Tare(7byte) +/-(1byte) weight(7byte) weight unit(2byte) ETX</td></tr>
<tr><td colspan="2">Ex) DATE : Aug 12th,2014, TIME : 12:00:00, the no. of weighing : 10, TARE : 2.000kg, current weight : 3.000kg
 
</td></tr>
</table>

Grand Total data	
ASCII : STX ID(2byte) RGRD ETX	**HEX :** 02 30 31 52 47 52 44 03
Response	STX ID RGRD P decimal point**(1byte) the no. of weighing (6byte) Accumulated weight(10byte) unit(2byte)** ETX

Ex) the no. of weighing : 10 , Accumulated Weight : 10.000kg

STX	ID		R	G	R	D	P	3	0	0	0	0	1	0
02h	30h	31h	52h	47h	52h	44h	50h	33h	30h	30h	30h	30h	31h	30h

0	0	0	0	0	1	0	0	0	0	k	g	ETX
30h	30h	30h	30h	30h	31h	30h	30h	30h	30h	6Bh	67h	03h

Finished Weight data	
ASCII : STX ID(2byte) RFIN ETX	**HEX:** 02 30 31 52 46 49 4E 03
Response	STX ID RFIN P **decimal point(1byte) +/- Finished weight(7byte)** ETX

Ex) Finished weight : 2.000kg

STX	ID		R	F	I	N	P	3	+	0	0	0	2	0
02h	30h	31h	52h	46h	49h	4Eh	50h	33h	2Bh	30h	30h	30h	32h	30h

0	0	ETX
30h	30h	03h

Current Time data	
ASCII : STX ID(2byte) RTIM ETX	**HEX :** 02 30 31 52 54 49 4D 03
Response	STX ID RTIM Current Time**(6byte)** ETX

예) 시간 : 12:00:00

STX	ID		R	T	I	M	1	2	0	0	0	0	ETX
02h	30h	31h	52h	54h	49h	4Dh	31h	32h	30h	30h	30h	30h	03h

Current date data	
ASCII : STX ID(2byte) RDAT ETX	**HEX :** 02 30 31 52 44 41 54 03
Response	STX ID RDAT Current Date**(6byte)** ETX

Ex) Date : Aug 12th ,2014

STX	ID		R	D	A	T	1	4	0	1	0	1	ETX
02h	30h	31h	52h	44h	41h	54h	31h	34h	30h	31h	30h	31h	03h

Tare data	
ASCII : STX ID(2byte) RTAR ETX	**HEX :** 02 30 31 52 54 41 52 03
Response	STX ID RTAR P **decimal point(1byte) +/-(1byte) TARE value(7byte)** ETX

Ex) TARE : 2.000kg

STX	ID		R	T	A	R	P	3	+	0	0	0	2	0	0	0	ETX
02h	30h	31h	52h	54h	41h	52h	50h	33h	2Bh	30h	30h	30h	32h	30h	30h	30h	03h

SP 1 data	
ASCII : STX ID(2byte) RSP1 ETX	**HEX :** 02 30 31 52 53 50 31 03
Response	STX ID RSP1 P1 **decimal point(1byte) SP 1 value(7byte)** ETX

예) SP1 value: 5.000kg

STX	ID		R	S	P	1	P	3	0	0	0	5	0	0	ETX
02h	30h	31h	52h	53h	50h	31h	50h	33h	30h	30h	30h	35h	30h	30h	03h

SP 2 data	
ASCII : STX ID(2byte) RSP2 ETX	**HEX :** 02 30 31 52 53 50 32 03
Response	STX ID RSP2 P **decimal point(1byte) SP 2 value (7byte)** ETX

예) SP2 value: 6.000kg

STX	ID		R	S	P	2	P	3	0	0	0	6	0	0	ETX
02h	30h	31h	52h	53h	50h	32h	50h	33h	30h	30h	30h	35h	30h	30h	03h

SP 3 data	
ASCII : STX ID(2byte) RSP3 ETX	**HEX :** 02 30 31 52 53 50 33 03
Response	STX ID RSP3 P **decimal point(1byte) SP 3 value (7byte)** ETX

예) SP3 value: 7.000kg

STX	ID		R	S	P	3	P	3	0	0	0	7	0	0	ETX
02h	30h	31h	52h	53h	50h	33h	50h	33h	30h	30h	30h	37h	30h	30h	03h

SP 4 data	
ASCII : STX ID(2byte) RSP4 ETX	**HEX :** 02 30 31 52 53 50 34 03
Response	STX ID RSP4 P **decimal point(1byte) SP 4 value (7byte)** ETX

예) SP4 value: 8.000kg

STX	ID		R	S	P	4	P	3	0	0	0	8	0	0
02h	30h	31h	52h	53h	50h	34h	50h	33h	30h	30h	30h	38h	30h	30h

0	ETX
30h	03h

SP 1,2,3,4, data	
ASCII : STX ID(2byte) RSPA ETX	**HEX :** 02 30 31 52 53 50 41 03
Response	STX ID RSPA P **decimal point(1byte) SP 1 value (7byte) SP 2 value (7byte) SP 3 value (7byte) SP 4 value (7byte)** ETX

예) SP1 value: 5.000, SP2 value: 6.000, SP3 value: 7.000, SP4 value: 8.000

STX	ID		R	S	P	A	P	3	0	0	0	5	0	0
02h	30h	31h	52h	53h	50h	41h	50h	33h	30h	30h	30h	35h	30h	30h

0	0	0	0	6	0	0	0	0	0	0	7	0	0	0
30h	30h	30h	30h	36h	30h	30h	30h	30h	30h	30h	37h	30h	30h	30h

0	0	0	8	0	0	0	ETX
30h	30h	30h	38h	30h	30h	30h	03h

Current weight, Input, Output state	
ASCII : STX ID(2byte) RWRS ETX	**HEX :** 02 30 31 52 57 52 53 03
Response	STX ID RWRS P **decimal point(1byte) +/-(1byte) current weight(7byte) INPUT1,2,3,4(4byte) OUTPUT1,2,3,4(4byte)** ETX **(ON : 1 OF : 0)**

예) Weight : 7.000kg, INPUT : IN1,IN3, OUTPUT : OUT2,OUT4

STX	ID		R	W	R	S	P	3	+	0	0	0	7	0
02h	30h	31h	52h	57h	52h	53h	50h	33h	2Bh	30h	30h	30h	37h	30h

0	0	1	0	1	0	0	1	0	1	ETX
30h	30h	31h	30h	31h	30h	30h	31h	30h	31h	03h

6-1-9. Write Command Detail

Zero (same as “ZERO” key)	
ASCII : STX ID(2byte) WZER ETX	**HEX :** 02 30 31 57 5A 45 52 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
TARE	
ASCII : STX ID(2byte) WTAR ETX	**HEX :** 02 30 31 57 54 41 52 03
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
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
HOLD	
ASCII : STX ID(2byte) WHOL ETX	**HEX :** 02 30 31 57 48 4F 4C 03
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
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
PRINT **(Data will be transferred to the port which is set as print mode -Function 303,310 - 02)**	
ASCII : STX ID(2byte) WPRT ETX	**HEX :** 02 30 31 57 50 52 54 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Grand Total Print **(Data will be transferred to the port which is set as print mode -Function 303,310 - 02)**	
ASCII : STX ID(2byte) WGPR ETX	**HEX :** 02 30 31 57 47 50 52 03
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
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Run	
ASCII : STX ID(2byte) WSTR ETX	**HEX :** 02 30 31 57 53 54 52 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX
Stop	
ASCII : STX ID(2byte) WSTP ETX	**HEX :** 02 30 31 57 53 54 50 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX

Date Setting

ASCII : STX ID(2byte) WDAT data(6byte) ETX

Ex) Date : Aug 12th ,2014

STX	ID		W	D	A	T	1	4	0	1	0	2	ETX
02h	30h	31h	57h	44h	41h	54h	31h	34h	30h	31h	30h	32h	03h

Response Normal : STX ID ACK ETX Error : STX ID NAK ETX

Time Setting

ASCII : STX ID(2byte) WTIM time(6byte) ETX

예)12:00:00

STX	ID		W	T	I	M	1	2	0	0	0	0	ETX
02h	30h	31h	57h	54h	49h	4Dh	31h	32h	30h	30h	30h	30h	03h

Response Normal : STX ID ACK ETX Error : STX ID NAK ETX

SP 1 setting

ASCII : STX ID(2byte) WSP1 SP1 value(7byte) ETX

예) SP1 : 5.000kg (decimal point 0.000)

STX	ID		W	S	P	1	0	0	0	5	0	0	0	ETX
02h	30h	31h	57h	53h	50h	31h	30h	30h	30h	35h	30h	30h	30h	03h

Response Normal : STX ID ACK ETX Error : STX ID NAK ETX

SP 2 setting

ASCII : STX ID(2byte) WSP2 SP2 value(7byte) ETX

예) SP2 : 6.000kg (decimal point 0.000)

STX	ID		W	S	P	2	0	0	0	6	0	0	0	ETX
02h	30h	31h	57h	53h	50h	32h	30h	30h	30h	36h	30h	30h	30h	03h

Response Normal : STX ID ACK ETX Error : STX ID NAK ETX

SP 3 setting

ASCII : STX ID(2byte) WSP3 SP3 value(7byte) ETX

예) SP3 : 7.000kg (decimal point 0.000)

STX	ID		W	S	P	3	0	0	0	7	0	0	0	ETX
02h	30h	31h	57h	53h	50h	33h	30h	30h	30h	37h	30h	30h	30h	03h

Response Normal : STX ID ACK ETX Error : STX ID NAK ETX

SP 4 setting	
ASCII : STX ID(2byte) WSP4 SP4 value(7byte) ETX	
예) SP4 : 8.000kg (decimal point 0.000)	
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX

STX	ID		W	S	P	4	0	0	0	8	0	0	0	ETX
02h	30h	31h	57h	53h	50h	34h	30h	30h	30h	38h	30h	30h	30h	03h

SP 1,2,3,4 setting	
ASCII : STX ID(2byte) WSPA SP1 value (7byte) SP2 value (7byte) SP3 value (7byte) SP4 value (7byte) ETX	
예) SP1 5.000kg SP2 6.000kg SP3 7.000kg SP4 8.000kg (decimal point 0.000일 때)	
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX

STX	ID		W	S	P	A	0	0	0	5	0	0	0	0
02h	30h	31h	57h	53h	50h	41h	30h	30h	30h	35h	30h	30h	30h	30h
0	0	6	0	0	0	0	0	0	7	0	0	0	0	0
30h	30h	36h	30h	30h	30h	30h	30h	30h	37h	30h	30h	30h	30h	30h
0	8	0	0	0	ETX									
30h	38h	30h	30h	30h	03h									

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

6-1-10. 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.**

Ad.	Length	Feature	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
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
445	2	RW	Current SP 1
447	2	RW	Current SP 2
449	2	RW	Current SP 3
451	2	RW	Current SP 4
461	2	RW	Free fall of SP1
463	2	RW	Free fall of SP2
465	2	RW	Free fall of SP3
467	2	RW	Free fall of SP4

6-1-11. 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
OUT1	OUT2	OUT3	OUT4

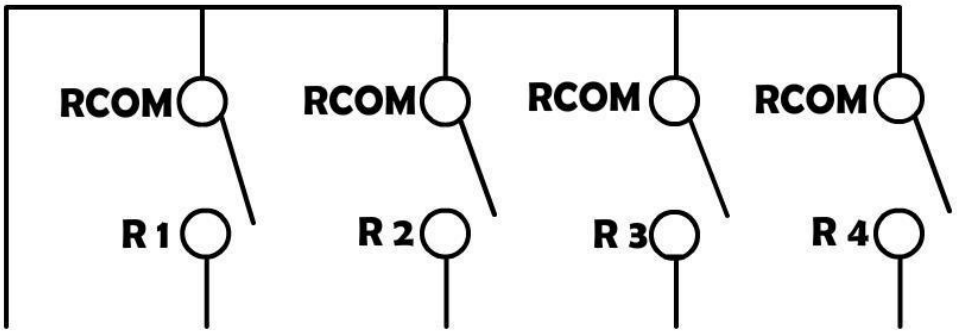
6-2. Relay Output

4pcs Control Relay output is installed in Output Terminal.

6-2-1. Relay Specification

Coiling Rating	12VDC
Contact Ratings	1A 24VDC

6-2-2. Relay Output Diagram.



Tip Under TEST Mode, Calibration mode and SET-POINT setting mode, the relay output will be OFF.

Caution Please check the optimal voltage of output terminal, if the high voltage power will be connected with output terminal, it may cause damage or relay or main board of indicator.

6-3. 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.

6-3-1. Specification

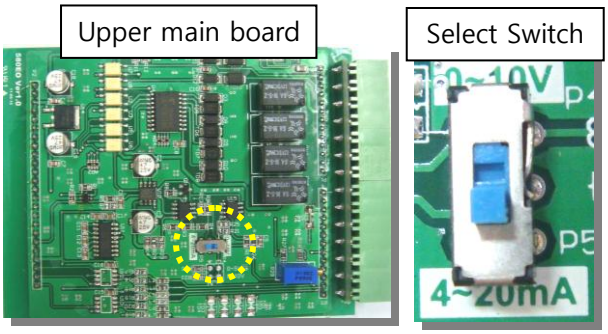
Output Current	Output Range :0~22㎃ (Default : 4~20㎃)
Accuracy	More than 1/5,000
Temperature Coefficient	0.01%℃
. Max Loaded Impedance	500Ω MAX

Tip Under Calibration mode or "CELL-ERR" condition, Analogue output will not activated.
If the output is deactivated, the last output signal value will be hold until next activation.

6-3-2. Output Adjustment

① **Default analog output value is 4mA(weight zero) , 20mA(Full using capa).**

② **The analogue output value is adjusted with DIGITAL MULTI-METER.**



Check the setting to use the analog output switch in the upper main board.(Default : 4~20mA)

③ **How to adjust analog output value.**

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

Step2) Enter "HF14 Minimum Analog Output Setting" mode.

Step3) Make Digital multi meter's value as minimum(ex:4mA) and save.

(When the SI580E indicate about 04.0, the Digital multi meter indicates about 4mA)

Step4) Enter "HF15 Maximum Analog Output Setting" mode

Step5) Make Digital multi meter's value as minimum(ex:20mA) and save.

(When the SI580E indicate about 20.00, the Digital multi meter indicates about 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.

6-4. 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.

6-4-1. Specification

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

Tip

According to display weight of indicator, analogue signal will be output.

The operator can determine 10V output spot by setting F51 function.

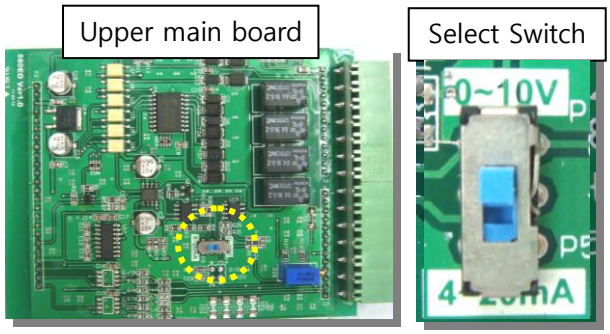
Under Calibration mode or "CELL-ERR" condition, Analogue output will not activated.

If the output is deactivated, the last output signal value will be hold until next activation

6-4-2. Output Adjustment

① **Default analog output value is 0V(weight zero) , 10V(Full using capa).**

② **The analogue output value is adjusted with DIGITAL MULTI-METER.**



Check the setting to use the analog output switch in the upper main board.(Default : 4~20mA)

③ **How to adjust analog output value.**

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

Step2) Enter "HF14 Minimum Analog Output Setting" mode.

Step3) Make Digital multi meter's value as minimum(ex:0V) and save.

(When the SI580E indicate about 0 , the Digital multi meter indicates about 0V)

Step4) Enter "HF15 Maximum Analog Output Setting" mode

Step5) Make Digital multi meter's value as minimum(ex:10V) and save.

(When the SI580E indicate about 10.00 , the Digital multi meter indicates about 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.

6-5 Serial Print (F303 or F310-02 setting) – RS-232 Serial 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.

6-5-1. Printing Format

Using the RS-485 or 422 interface, please use convertor and converts to RS-232 and connect with Serial printer.

If you use RS-232 serial interface, connect directly without any convertor.

6-5-2. English Format (F111-01)

```
============================
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(352-01)

```
============================
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(F352-00)

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

Grand Total Print delete(F358-01)

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 400Ω ±30 2. Output Resistance of "SIG+" and "SIG-" is about 350Ω ±3.5 3. Isolate Resistance is more than 100MΩ
Weight Value is increased regular rate, but not return to "Zero"	1. 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	
"UnPASS"	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	
"OvEr" **(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
Err-01	When Max capacity/digit value is over 20,000	Re-input the Max Capacity, less than 20.00 (Max Capacity / Digit)
Err-04	Standard weight value is over than Max Capacity	Re-input Standard weight value with Number keys, under Max Capacity
Err-05	Standard weight value is less than 10% of Max Capacity	Re-input Standard weight value with Number keys, more than 10% of Max Capacity
Err-06	1. Amp. Gain is too big 2. Sig+ and Sig- wire connection error 3. Test weight is not loaded	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)
Err-07	1. Amp. Gain is too small 2. Sig+ and Sig- wire connection error 3. Test weight is not loaded	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)
Err-08	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.	- Find vibration cause and remove - Load cell check - Load cell cable and connecting condition check

7-3. Digital Weighing Indicator

Display	Cause	Treatment
"CELL" **or** "OUEr"	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 F102-01(Back-up) mode so that the indicator can remember first empty value.
"SEtt in"	When Power is on, "SET" displays. It means EEPROM has some problem.	Please contact the distributor or Head Office.
"HALt"	H/W has some problem.	
"t-Err"	The dead Battery	

※ "CELL-Er" on the screen relay output, Analog output, ZERO and PRINT key not activate

WARRANTEE CETIFICATION

This product is passed SEWHACNM strict quality test.

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

Then, we will repair or replace free of charge.

WARRANTEE CLAUSE

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

2. Warrantee Exception Clause

- Warrantee period is expired.
- Any kinds of Mal-function or defection caused by Modification or Repair without SEWHACNM permission.
- Any kinds of Mal-function, Defection, or External damage, caused by operator
- Any kinds of Mal-function, Defection, caused by using spare part from Non-Authorized Distributor or Agent.
- Any kinds of Mal-function, Defection, caused by not following Warnings or Cautions mentioned on this manual.
- Any kinds of Mal-function, Defection caused by "Force Majeur", like Fire, Flood.
- Without presentation of this **"Warrantee Certification".**

3. Other

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

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Made in KOREA

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Email : sales@sewhacnm.co.kr

Product	Digital Weighing Indicator
Model	SI 580E
Serial No.	
AUTHORIZED STAMP