

SI400

Digital indicator

User manual

Manual Ver 3.11

Program Ver 3.10



Contents

1. Precautions.....	3
2. Introduction.....	4
2-1. Introduction	4
2-2. Features.....	4
2-3. Components.....	4
3. Specification.....	5
3-1. Specification.....	5
3-2. Front.....	6
3-3. Rear Panel.....	9
4. Installation	10
4-1. Size.....	10
4-2. Panel Cutting Size.....	10
4-3. How to connect Load cell to Indicator	11
4-4. External Equipment Connection.....	12
5. Set-up.....	13
5-1. Calibration.....	13
5-2. Simulation Calibration.....	17
5-3. Function Mode	20
5-4. Test mode.....	31
6. Option card.....	34
6-1. Serial interface.....	34
6-2. Ethernet Interface.....	35
6-3. Analog output	36
6-4. Parallel interface.....	38
6-5. Data Storage Device (SD memory card)	41
6-6. Option card combination.....	42
7. Communication Data Format	43
7-1. Stream Mode	43
7-2. Command mode.....	47
7-3. Command mode (compatible with SI4000 series)	55
7-4. Modbus	61
7-5. Print format.....	64
8. Error & treatment	66
8-1. Error during Load Cell Installation.....	66
8-2. Error during Calibration	67
8-3. Error and Treatment.....	68

1. Precautions

1-1. Caution / Warning Mark



This mark warns the possibility to arrive death or serious injury in case of wrongly used.

- 1) Do not drop the product and avoid serious external damage on it.
- 2) Do not install the product under direct sunshine or severe vibration.
- 3) Do not install the product under conditions with high voltage or severe electric noise.
- 4) Turn off the power when you use it with external input devices.
- 5) Do not sprinkle water on the product or avoid rainy conditions.



Caution Mark means there is possibility to cause material loss if the product was not handled in a proper way.

- 1) The products can be changed without previous notice as the version is upgraded.
- 2) As version is upgraded the product version increases and all of the function will remain if possible.
- 3) Do not use the product at conditions with fluctuating temperature or severe vibration.

1-2. Copyrights

- 1) All rights are reserved by SEWHACNM Co., LTD.
- 2) Any kind of copy or distribution is prohibited without permission from SEWHACNM Co., LTD.
- 3) This manual can be changed without previous notice as the version is upgraded. If you have any kind of inquiries, please contact your local agent or the Headquarter, SEWHACNM Co., LTD.

1-3. Inquiries

If you have any inquiries about our products, please contact us at following address.

- 1) Headquarter : SEWHACNM Co., LTD
- 2) Homepage : <http://www.sewhacnm.co.kr>
- 3) E-mail : sales@sewhacnm.co.kr

2. Introduction

2-1. Introduction

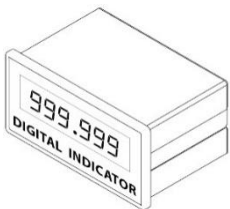


Thank you for Purchasing “SI 400”, the digital weighing indicator. This product is a high-quality indicator connectible to other external devices and has high resolution. Plus, Current Loop and RS232C Interface with Modbus Protocol is available for user’s convenience.

Please learn and review this manual before use it and enjoy all of the function of this product.

2-2. Features

- 1) It is convenient to install this product into a control box as a panel type.
- 2) This product is resistant to dust or moisture since display part is covered with polycarbonate film.
- 3) RS232C and Current loop interface available (Modbus Protocol including)
- 4) You can choose various options as below.
 - Serial interface RS232C / RS422 / RS485
 - Ethernet interface (TCP/IP)
 - Analog Output 4~20mA, 0~10V
 - Parallel interface BCD out / BCD in
 - Data storage device (SD Memory Card)

2-3. Components

		
Indicator	Manual	Power cable

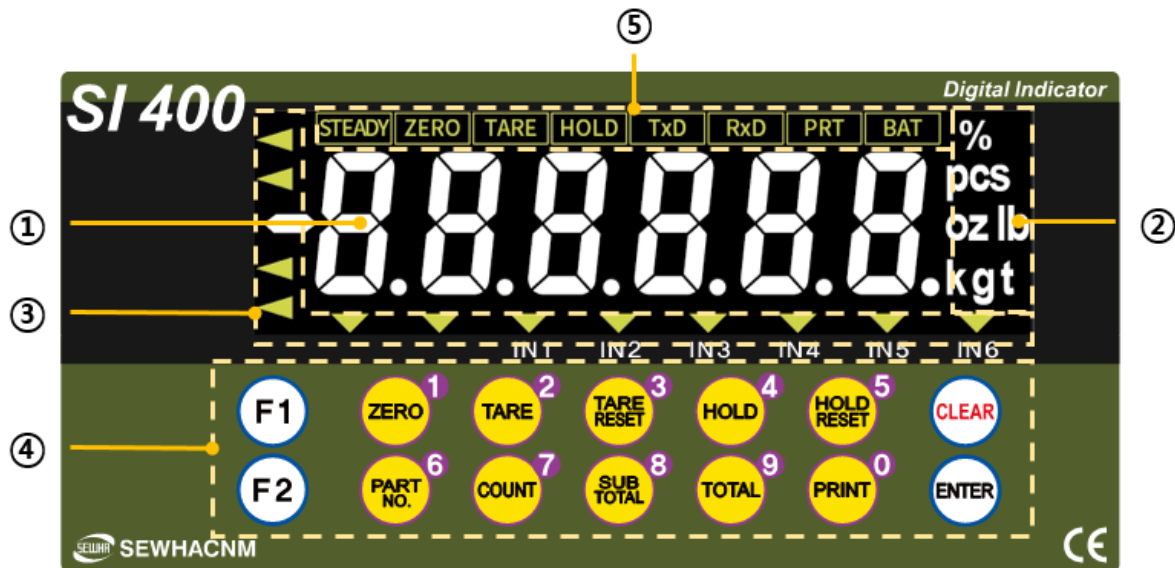
3. Specification

3-1. Specification

Content			Specification
Load Cell Input Analog Signal	Display Resolution		1/20,000
	Internal Resolution		1/2,000,000 ($\pm 1,000,000$)
	Input Sensitivity		Min 0.1 μ V/V
	Max Signal Input Voltage		Max 3.2mV/V
	Load Cell Excitation		DC +5V
	A/D Converting Method		Sigma-Delta
	Decimal Point		0, 0.0, 0.00, 0.000
	Drift	Zero	10PPM/ $^{\circ}$ C
		Span	10PPM/ $^{\circ}$ C
	Non-Linearity		0.005% Max
Operating Environment	Operating Temperature Range		-10 $^{\circ}$ C ~ +40 $^{\circ}$ C [14 $^{\circ}$ F ~ 104 $^{\circ}$ F]
	Operation Humidity Range		40% ~ 85% RH, No Condensation
Front	Display		1 inch(25.4mm), Red FND State(word) 8 digit, Green LED State(arrow) 12 digit, Green LED
	Key		14EA
Interface	External Input		6EA, Dry Contact(Zero Voltage Contact)
	Serial Interface	RS232C	PC, PLC, Printer, etc.
		Current Loop	External display
Power	AC : 100~240V, 50~60Hz, 0.5A		
Size	200mm(W) x 100mm(H) x 140mm(D), 1.2Kg		
Option	OP-01	Serial Interface	RS-422
	OP-02		RS-485
	OP-03		RS-232C
	OP-04	Ethernet Interface	TCP/IP
	OP-05	Analog Output	Iout (4~20mA)
	OP-06		Vout (0~10V)
	OP-07	Parallel Interface	BCD OUT
	OP-08		BCD IN(Number input)
	OP-09	Data storage device	SD memory card

3-2. Front

3-2-1. Display and keypad



① Number 6 digits

② Unit

③ Condition (Arrow)















- IN1 : ON when INCOM and IN1 are connected
- IN2 : ON when INCOM and IN2 are connected
- IN3 : ON when INCOM and IN3 are connected
- IN4 : ON when INCOM and IN4 are connected
- IN5 : ON when INCOM and IN5 are connected
- IN6 : ON when INCOM and IN6 are connected

④ Key pad















⑤ State(word)

- STEADY : Current weight is steady
- ZERO : Current weight is zero
- TARE : Using Tare function
- HOLD : Using Hold function
- TxD : Transmitting data via RS232C port
- RxD : Receiving data via RS232C port
- PRT : Printing

3-2-2. Key

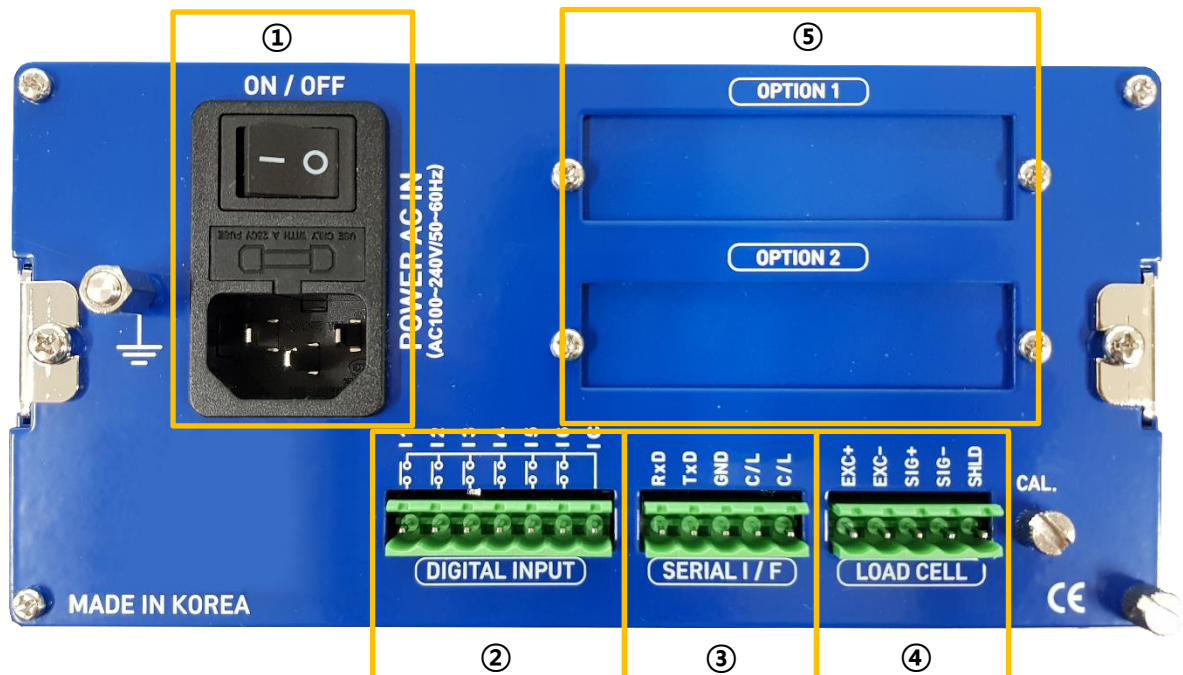
	- Set zero point
	- Set Tare
	- Reset Tare
	- Set Hold
	- Reset Hold
	- Part number setting
	- Display Weighing Count of current P/N for 5 seconds
	- Display Sub-total of current P/N for 5 seconds
	- Display Total of current P/N for 5 seconds
	- Print displayed weight value (Transmit the data to printer)
	- Enter Function mode
	- Enter Hidden function mode
	- Cancel or Move to previous step
	- Save and Move to next step

3-2-3. Key combination

 ➡ 	Double tare setting
 ➡ 	Current weight displays for 5 seconds (F105-01 / F105-02)
 ➡ 	Transmit Sub-total data
 ➡ 	Transmit Total data
 ➡ 	Input tare value by number key (F530-01)
 ➡ 	Delete Sub-total
 ➡ 	Delete Total

- The maximum of weighing counting number is 999,999. It will be initialized when it is over the max value.
- The maximum of cumulative weighing counting number is 999,999,999. It will be initialized when it is over the max value.

3-3. Rear Panel



- ① AC Power Input Terminal
- ② External Input Terminal (Dry Contact : zero voltage point)
- ③ Serial Interface Terminal
RS-232C and Current loop included
- ④ Load Cell Terminal
- ⑤ Option port (Selectable)

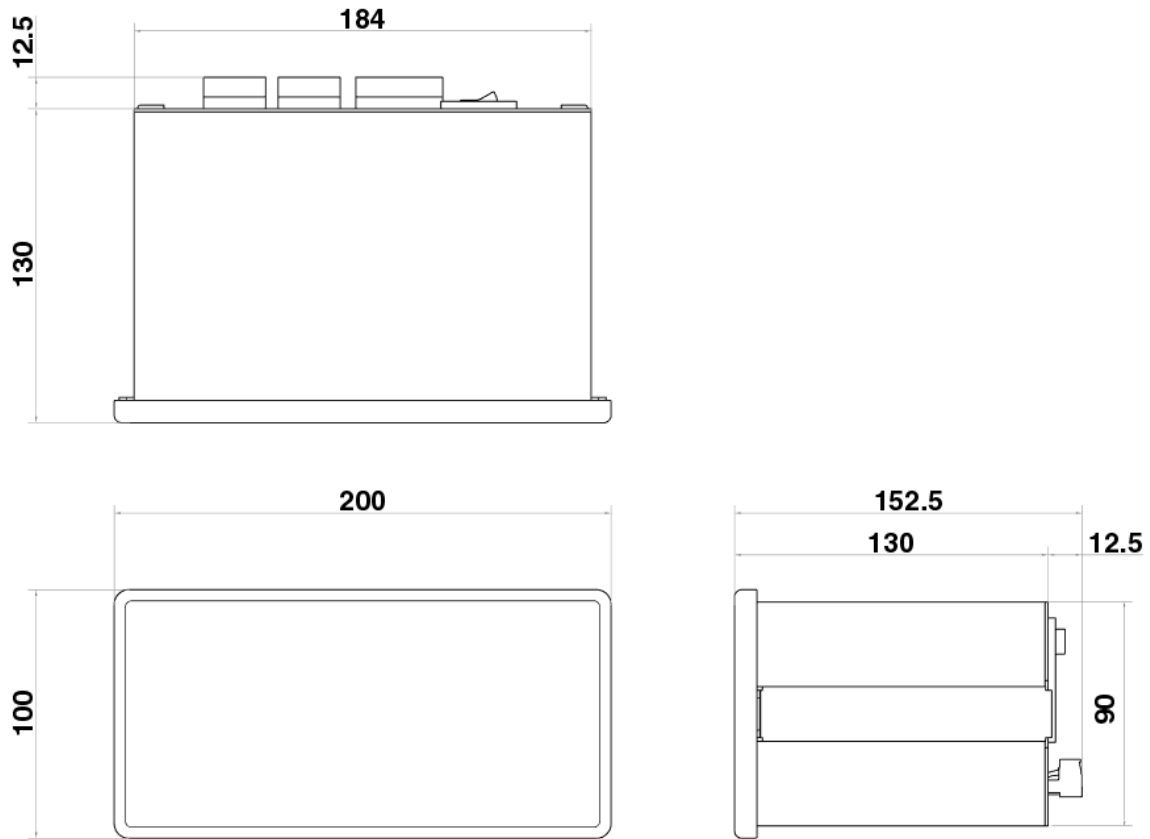


Caution

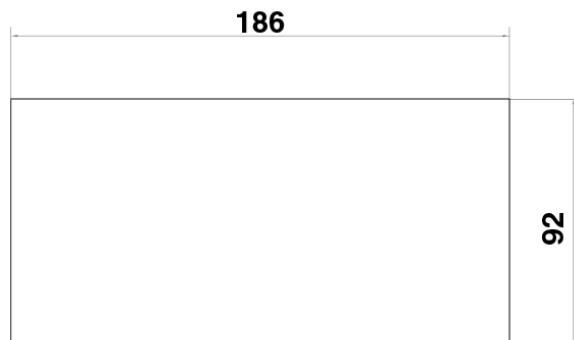
Check the specification of the each terminal written on the panel when you connect the product to other devices.

4. Installation

4-1. Size (Unit: mm)



4-2. Panel Cutting Size (Unit: mm)



4-3. How to connect Load cell to Indicator

How to install load cell input terminal

(The color of the cables can differ from each manufacturer.)



1. If you use tension type of load cell as compression type, connect SIG+ and SIG- crossly.
2. The product can be damaged if you connect other cable to load cell input terminal.
3. Turn off the power of the indicator during connection to load cell.
4. Do not weld around the device.
(Parts of internal circuit of indicator or load cell can be broken during arc welding or electric welding.)



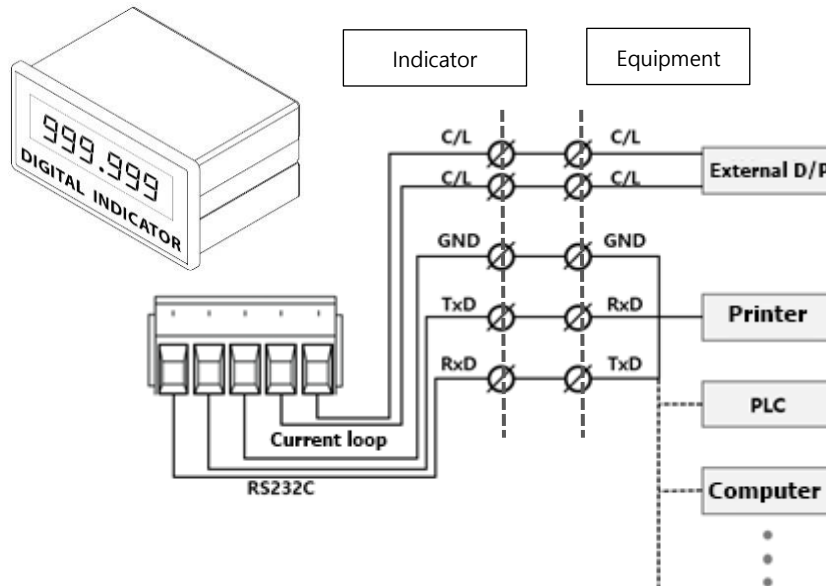
※ Precautions for Indicator-Load Cell Connection

1. You can use a maximum of 8 load cells. (350Ω standard)
2. The product has to be horizontal to the ground for more precise value.
3. Use summing box to adjust output deviation minimally when you install load cell more than two. (Each output gap can cause a margin of error.)
4. Change in temperature can cause a margin of error.
5. Do not weld around the device. If you need, disconnect every cable of indicator.
6. If you weigh static electricity, use earth shield wire or other ways to protect static electricity flowing in Indicator.

4-4. External Equipment Connection

4-4-1. Serial Interface (Basic Option) – RS232C and Current loop

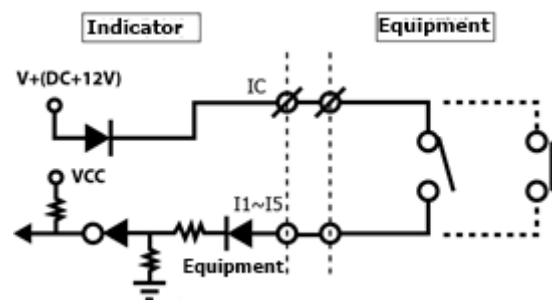
- 1) RS232C interface is vulnerable to electric noise. It is mainly used for Short distance communication (within 10m approximately) like computer, PLC, External Display, and etc.



- 2) Current Loop Interface is much stronger against electric noise than RS232C Interface, so Current Loop is adequate for middle distance communication (within 100M approximately) like External display.

4-4-2. External Input (Basic Option) – Input 6EA

- 1) Each external digital Input can be set on F156~161.
- 2) Dry contact for Input Signal



- 3) Terminal Component
 - I C : Common Input terminal (V+ : 12V DC)
 - I 1~ I 6 : Input signal (Output relay: zero voltage point-relay or switch signal)

5. Set-up

5-1. Calibration

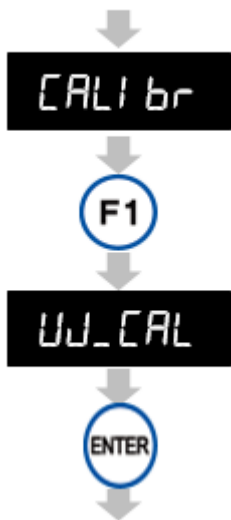
Calibration is a work to correct linearity from zero to Max Capacity, which becomes standard when an indicator displays the current weight.



- When enter Calibration mode, Tare/Hold/Print function is initialized.
- Preheat the Indicator for 5 minutes before Calibration to get more exact result.

Step 1. Enter Calibration mode

Press CAL Key



<CAL key position>

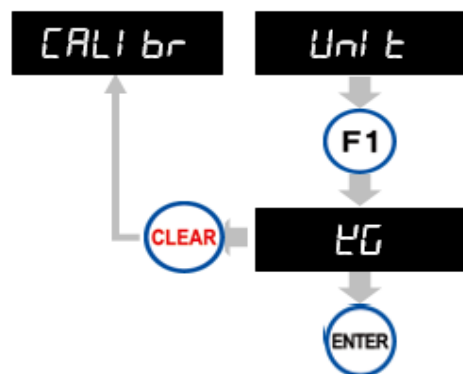


Remove "CAL-BOLT" on the Rear panel and press "CAL key" inside.

<Key Explanation>

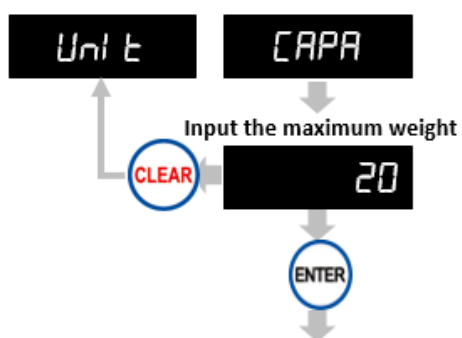
- **F1** : Select Calibration Mode
- **ENTER** : Save and Move to next step
- **CLEAR** : Cancel and Back to previous step

Step 2. Set Unit



- **F1** : Select unit
- **ENTER** : Save and Move to next step
- **CLEAR** : Cancel and Back to previous step

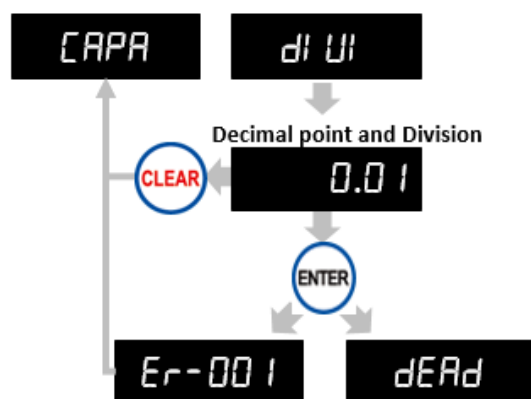
Step 3. Set Maximum Capacity



- Number Key : Input Maximum Capacity
- **ENTER** : Save and Move to next step
- **CLEAR** : Cancel and Back to previous step

Ex : When you want to set 20.00kg (division 0.01kg) for capacity, input 20.

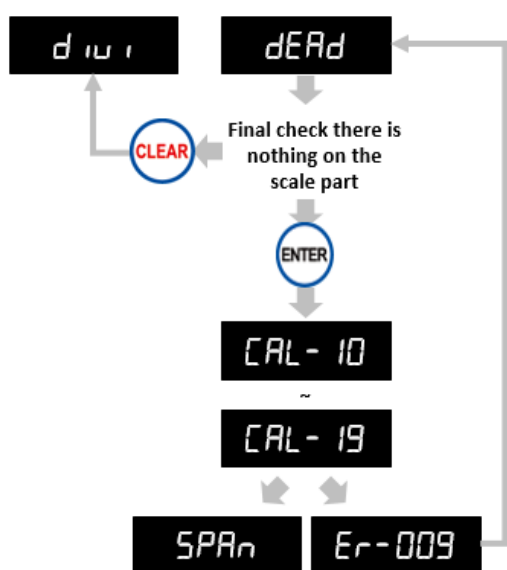
Step 4. Set Decimal Point and Division



- **F1** : Move Decimal point
- **F2** : Increase Division
- **ENTER** : Save and Move to next step
- **CLEAR** : Cancel and Back to previous step

- ※ You can set the decimal point to 3 places (0, 0.0, 0.00, 0.000) and division can be set as 1, 2, 5, 10, 20, 50.
- ※ The value of (Max capacity/Division) should not be over 20,000.
- ※ If the value of (Max capacity/Division) is over 20,000, “Er-001” will show up and you have to start from “Step 3. Set Maximum Capacity” again.

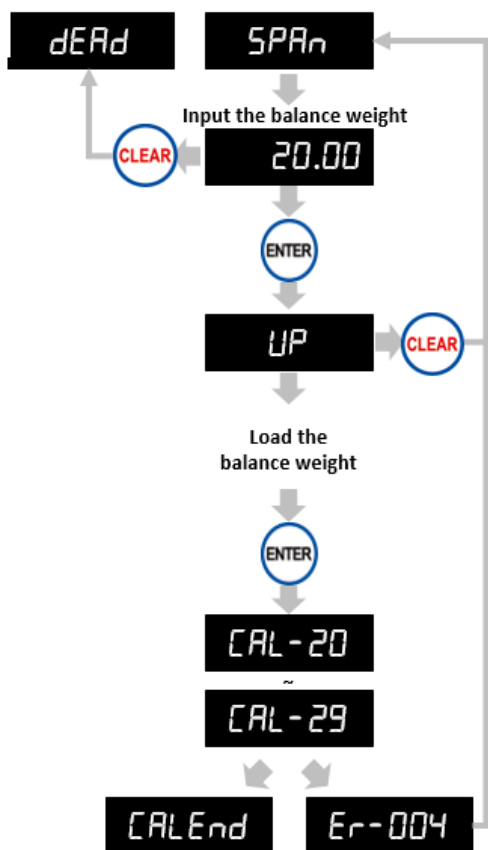
Step 5. Measure Dead Weight



- **ENTER** : Save and Move to next step
- **CLEAR** : Cancel and Back to previous step

- ※ If “Er-009” shows up, check if there is anything on the scale part or vibration which interrupt calculation of the indicator.

Step 6. Span Calibration



- Number Key : Input Balance weight

- **ENTER** : Save and Move to next step

- **CLEAR** : Cancel and Back to previous step

- **Er-004** : The balance weight is over Max capacity

- **Er-005** : The balance weight is under 10% of Max capacity

5-2. Simulation Calibration

You can proceed with Simulation Calibration when you do not have any balance weight. It is the way to calculate and adjust weight via Max capacity of load cell and Rated Output Value. The guaranteed accuracy of simulation calibration is 1/3,000 and it can differ from the accuracy of Rated Output Value of load cell.

Step 1. Enter Simulation Calibration Mode

Input the CAL key

CAL br

F2

5.CAL

ENTER

<CAL key position>



Remove "CAL-BOLT" on the Rear panel and press "CAL key" inside.

<Key Explanation>

- **F2** : Select Calibration Mode
- **ENTER** : Save and Move to next step
- **CLEAR** : Cancel and Back to previous step
-

Step 2. Set Unit

CAL br

Unit

F1

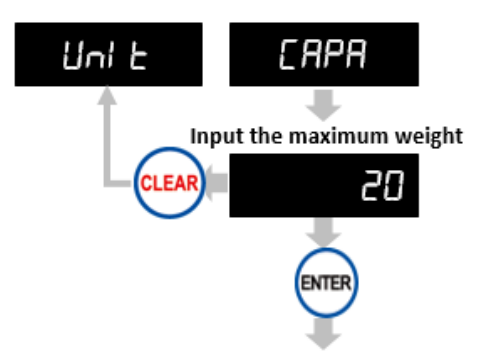
CLEAR

g

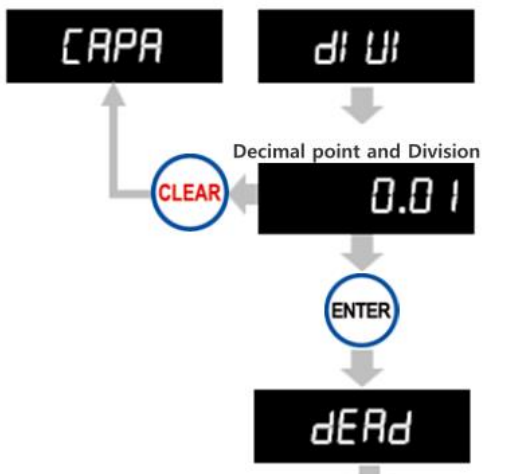
ENTER

- **F1** : Select unit
- **ENTER** : Save and Move to next step
- **CLEAR** : Cancel and Back to previous step

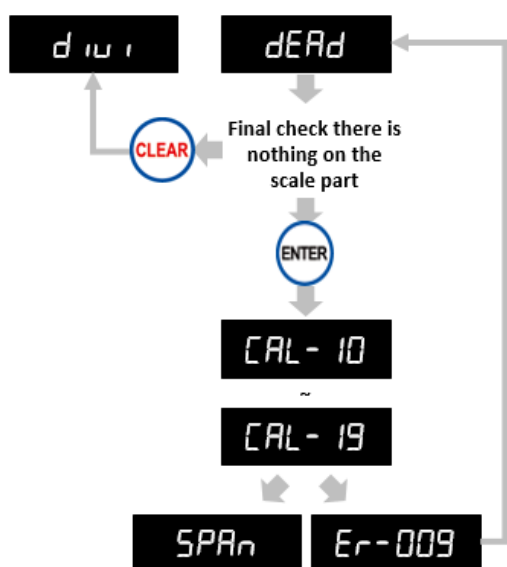
Step 3. Set Maximum Capacity

	<ul style="list-style-type: none"> - Number Key : Input Maximum Capacity - ENTER : Save or Move to next step - CLEAR : Cancel or Back to previous step
<div style="display: flex; justify-content: space-between;"> <div data-bbox="319 716 638 940" style="border: 1px solid black; padding: 5px; width: 40%;"> <p>MODEL: xxxxx</p> <p>CAPA: 20kg</p> <p>R.O: 1.429mV/V</p> <p>S/N : xxxxxxxx</p> </div> <div data-bbox="782 716 1372 985" style="width: 55%;"> <p>※ Capacity in Simulation Calibration means the capacity written on load cell label.</p> <p>※ Input the capacity of load cell multiplied by the number of load cell. (number of load cell * capacity of load cell)</p> </div> </div> <p style="text-align: center; margin-top: 10px;"><Load Cell Label Explanation ></p>	

Step 4. Set Decimal Point and Division

	<ul style="list-style-type: none"> - F1 : Move Decimal point - F2 : Increase Division - ENTER : Save and Move to next step - CLEAR : Cancel and Back to previous step
<p>※ You can set the decimal point to 3 places (0, 0.0, 0.00, 0.000) and division can be set as 1, 2, 5, 10, 20, 50.</p> <p>※ The value of (Max capacity/Division) should not be over 20,000.</p> <p>If the value of (Max capacity/Division) is over 20,000, “Er-001” will show up and you have to start from “Step 3. Set Maximum Capacity” again.</p>	

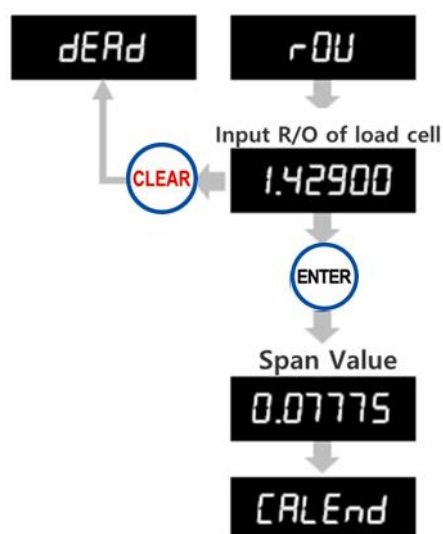
Step 5. Measure Dead Weight



- **ENTER** : Save and Move to next step
- **CLEAR** : Cancel and Back to previous step

※ If “Er-009” shows up, check if there is anything on the scale part or vibration which interrupt calculation of the indicator.

Step 6. Set R.O.V (Rated Output Voltage/mV)



- Number: Input the balance weight
- **ENTER** : Save and Move to next step
- **CLEAR** : Cancel and Back to previous step

MODEL: xxxxx
CAPA: 20kg
R.O: 1.429mV/V
S/N : xxxxxxxx

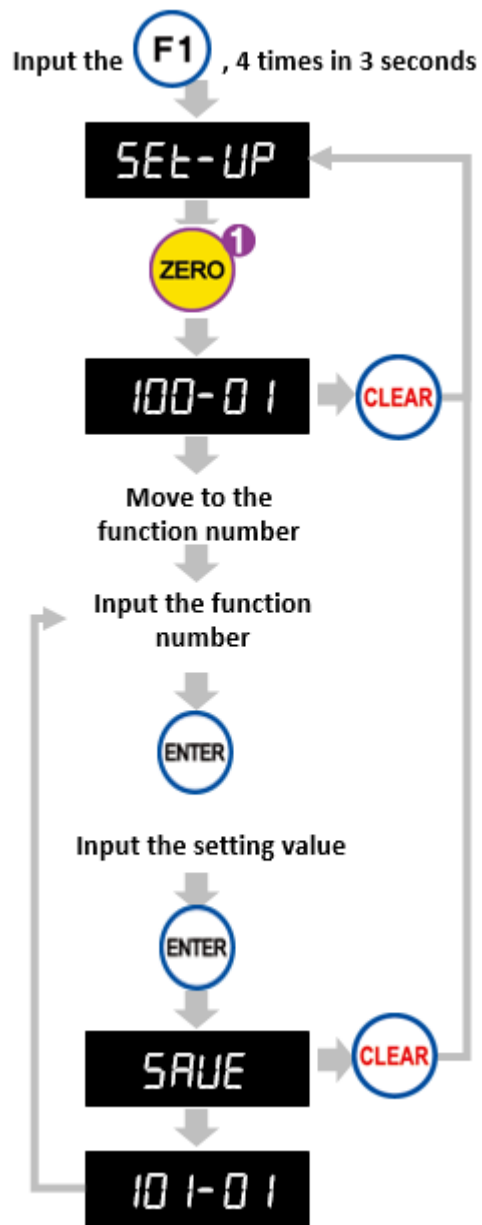
<Load Cell Label Explanation >

※ “Er-001” means you input wrong value. In this case, you need to check load cell label again.

5-3. Function Mode

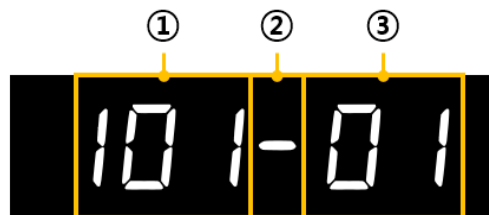
Function Setting makes indicator operate perfectly with surrounding condition.

5-3-1. How to enter Function Mode



- **F1** : Change the cursor
- **F2** : Move the cursor to Function Number
- **ENTER** : Move to Function number input and save Setting value
- **CLEAR** : Cancel or Back to previous step

※ Display Explanation



- ① Function Number
- ② **ENTER** : Increase Function Number
- ③ Setting Value

5-3-2. F-Function List

No.	Subject	Default	Content
Function number 100~119 : Indicator system setting			
100	ID Number	01	01~99 ID number
101	Weight Back-up Mode	01	00 : Normal Mode 01 : Zero/Tare Back-Up Mode 02 : Zero Back-Up Mode
102	Weighing Data Saving method	03	00 : Manual (When Print key is input) 01 : Auto (At every steady state) 02 : Auto (At the first steady state) 03 : Auto (After weighing is finished) 04 : Manual or Auto (at every steady state) 05 : Manual or Auto (At the first steady state) 06 : Manual or Auto (After weighing is finished)
104	Display Update Speed	09	01 : 1 time/seconds 07 : 20 time/seconds 02 : 2 time/seconds 08 : 30 time/seconds 03 : 3 time/seconds 09 : 60 time/seconds 04 : 6 time/seconds 05 : 10 time/seconds 06 : 15 time/seconds
105	Main Display Setting	00	00 : Current weight 01 : Sub-total weight 02 : Total
106	Under UNPASS/OVERLOAD state, weight display	00	00 : Display 01 : No display
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 : 0.01 sec)

No.	Subject	Default	Content
110	External input delay time	10	01 ~ 50 (Unit : 0.01 sec)
111	Key Lock	00	00 : disable 01 : enable
Function number 120~129 : Print Function			
120	Print Language	00	00 : Korean 01 : English
121	Print Format Setting	00	00 : continuous 01 : continuous (tare/net weight included) 02 : single 03 : single (tare/net weight included) 04 : single array (tare/net weight included)
122	Paper withdraw rate (continuous / single)	00	00 ~ 09 (unit : 1line)
123	Paper withdraw rate (total/ sub-total)	00	00 ~ 09 (unit : 1line)
124	Delete contents after printing sub-total	00	00 : delete 01 : disable
125	Delete contents after printing total	00	00 : delete 01 : disable
Function no. 130~139 : Basic Function Setting for Indicator Weighing System			
130	Steady Range	08	01 ~ 99 (unit : 1 = 0.25 division)
131	Delay to judge Steady state	10	01 ~ 99 (unit : 1 = 0.1 sec)
132	Digital Filter	25	01(weak vibration) ~ 50(strong vibration)
133	Auto Zero Range	00	01 ~ 99 (unit : 1 = 0.25 division)
134	Zero Key Operation	00	00 : No limit 01 : Active only under steady condition

No.	Subject	Default	Content
135	Zero Key Range	02	00 : less than 2% of Max Capacity 01 : less than 5% of Max Capacity 02 : less than 10% of Max Capacity 03 : less than 20% of Max Capacity 04 : less than 50% of Max Capacity 05 : less than 100% of Max Capacity 06 : No limit
Function number 150~199 : External Input Setting			
156	External Input 1 setting	01	00 : Disuse 06 : Hold reset 01 : Zero 07 : Hold/Hold reset
157	External Input 2 setting	04	02 : Tare 08 : Print 03 : Tare reset 09 : Sub-total print
158	External Input 3 setting	07	04 : Tare/tare reset 10 : Grand-total 05 : Hold print
159	External Input 4 setting	11	
160	External Input 5 setting	13	
161	External Input 6 setting	14	
Function no. 200~209 : Basic Serial Interface (RS232C/Current Loop) Setting			
Function no. 210~219 : Option Serial Interface (RS232C/RS422/RS485) Setting			
200	Data bit/Stop bit/ Parity	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
210 (Option)			

No.	Subject	Default	Content
201	Baud Rate	02	00 : 2,400bps 05 : 28,800bps
			01 : 4,800bps 06 : 38,400bps
211			02 : 9,600bps 07 : 57,600bps
(Option)			03 : 14,400bps 08 : 76,800bps
			04 : 19,200bps 09 : 115,200bps
202	Communication Mode	00	00: Stream mode
212			01: Command mode
(Option)			02: Command mode(SI 4000 format)
			03: Print mode
			04: Modbus (RTU)
203	Serial Interface Stream Mode Protocol (F202-00 / F212-00)	00	00 : format1 (18byte)
213			01 : format2 (21byte)
(Option)			02 : format3 (17byte)
			03 : format4 (22byte)
204	Stream Mode Data Output (F202-00 / F212-00)	00	00 : continuous
214			01 : 1 time at every steady state
(Option)			02 : 1 time at the first steady state (over Near Zero)
			03 : 1 time after weighing is finished
			04 : Input Print key or using external device
205	Command Checksum	00	00 : Disuse
215			01 : Use
(Option)			
Function number 250~259 : Option Ethernet Interface Setting			
252	Ethernet Interface Communication Mode	03	00: Stream mode 01: Command mode 02: Command mode(SI 4000 format) 03: Modbus TCP/IP

No.	Subject	Default	Content
253	Ethernet Interface Stream Mode Protocol (F252-00)	00	00 : format1 (18byte) 01 : format2 (22byte) 02 : format3 (17byte) 03 : format4 (22byte)
254	Ethernet Interface Stream Mode Data Output (F252-00)	00	00 : continuous 01 : 1 time at every steady state 02 : 1 time at the first steady state (over Near Zero) 03 : 1 time after weighing is finished 04 : Input Print key or using external device
255	Ethernet "Check- Sum" under command mode	00	00 : Disuse 01 : Use

※ Remark: Set F250-00 for BCD OUT option

※ Unable to use Ethernet and BCD OUT simultaneously.

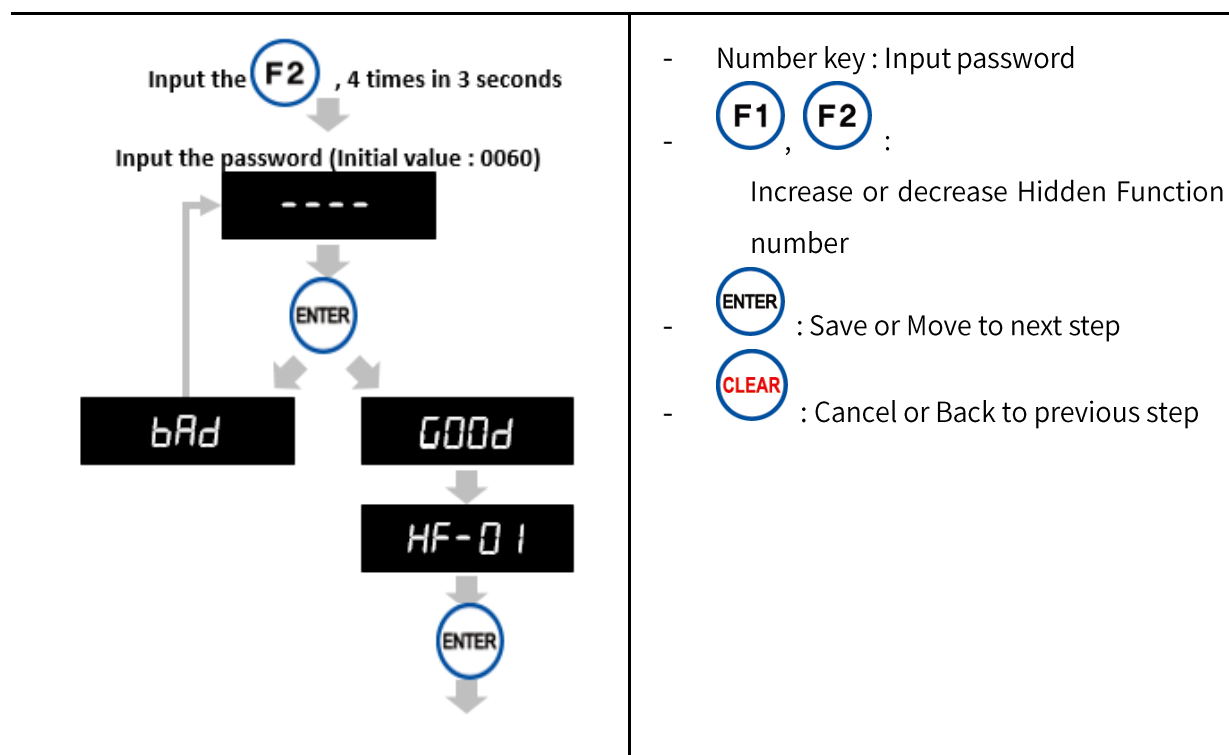
Function number 300~309 : Option Analog Output Interface Setting			
300	Analog Output Direction	00	00 : Forward (4~20mA, 0→10V) 01 : Reverse (20~4mA, 10→0V)
301	Analog Max Output Range	00	00 : Absolute value (regardless of mark "-" or "+") 01 : Positive value (Output when current weight is "+")
302	Analog Max Output (Iout=20mA, Vout=10V) Standard	00	00 : Max capacity 01 : SP1 value 02 : SP2 value 03 : SP3 value 04 : SP4 value 05 : Max capacity (Gross value under Tare state)

No.	Subject	Default	Content
Function number 310~319 : Option BCD IN Interface (Part Number Input)			
310	BCD IN Interface (External Part Number Input)	00	00: Disuse 01: Unit digit(4bit) and Tenth digit(4bit) 02: Input value by binary (8bit) 03: Absolute value (IN1=1~IN8=8)
Function number 330~339 : Option Data storage Device (SD memory card)			
330	SD Memory Card	00	00 : disable 01 : enable (“Sd-err” displays if SD card is not inserted)
331	SD Auto Data Save	01	00 : disable 01 : enable
Function number 501~599 : Indicator weighing process			
502	Zero State Lamp	00	00 : Near Zero (Absolute value) 01 : Zero 02 : Near Zero (Positive value)
530	Tare Setting Method	00	00 : Tare key 01 : Input with number keys 02 : Input with number key after Tare key
531	Tare Operation limit	00	00 : No limit 01 : Active only under steady condition
532	Tare Operation range	02	00 : less than 10% of Max Capacity 01 : less than 20% of Max Capacity 02 : less than 50% of Max Capacity 03 : less than 100% of Max Capacity
533	Tare Operation Delay Time	00	00 : disable 01 ~ 10 : enable (Unit : 1 sec)
534	Auto Zero After Tare Key Input	00	00 : disable 01 : enable


No.	Subject	Default	Content
535	Zero Lamp During Tare State	00	00 : ON when displayed weight is zero 01 : ON when gross weight excluding tare weight
537	Auto Tare Reset	00	00 : disable (Manual reset) 01 : Auto Reset under Near Zero range 02 : Auto Reset under Steady state
538	Auto Tare Reset Delay Time	00	00 : disable (right after Key or External input) 00 ~ 09 : enable (Unit : 1 second)
540	Hold Mode	00	00: Sample hold 01: Peak hold 02: Average hold
541	Auto Hold reset setting (F540-00 / F540-02)	00	00 : disable 01 : enable(Auto hold reset under Near Zero range)
542	Hold Delay Time	00	00 : disable (right after Key or External input) 01 ~ 10 : enable (Unit : 1 second)
544	Hold Reset Delay Time	00	00 : disable (Right after conditions are met) 01 ~ 10 : enable (Unit : 1 second) (When conditions are met after setting time)
544	Hold Reset Delay Time	00	00 : disable (Right after conditions are met) 01 ~ 10 : enable (Unit : 1 second) (When conditions are met after setting time)
545	Average Hold Time	10	Calculate average weight during set time (Unit : 0.1 second)


5-3-3. Hidden Function Mode

※ How to enter Hidden Function Mode



No.	Subject	Default	Remarks
HF01	Serial Number	xxxxxx	Factory release number
HF02	S/W version	Ver 3.10	
HF03	Model	SI400	
HF04	Date	YY.MM.DD	Able to set using keys
HF05	Time	HH.MM.SS	Able to set using keys
HF06	Password Setting - Password setting for Hidden Function Mode (4 digits) - Input password twice to check	----	Able to set using keys
HF07	Function Reset	FUNSET	ZERO ¹ for "YES"-> Press ENTER to proceed with reset. TARE ² for "NO"-> Press ENTER to cancel reset.
HF08	Factory Reset	ALLSET	

No.	Subject	Default	Remarks
HF10	Max Capacity	15.000	Change after calibration
HF11	Span Constant	x.xxxxx	
HF12	Near Zero Range	0.000	Able to set using keys
HF13	Use Simulation Calibration	00	00 : disuse 01 : use
HF14	Span Value Input	OrnU	Input Span Value with Calibrator
HF15	Simulation Calibration Constant Value	x.xxxxx	
Option Analog Output Interface Setting (HF20-HF22)			
HF20	Analog Output Setting	00	00 : Iout(4-20mA) 01 : Vout(0-10V)
HF21	Minimum Analog Output Adjustment (Current/Voltage)	0.00	Input ±gap value (F1 for minus mark '-')
HF22	Maximum Analog Output Adjustment (Current/Voltage)	0.00	
Option Ethernet Interface Setting (HF30~HF49)			
HF30 ~ HF33	IP ADDRESS (1~4)	192.168.0.101	Able to set using keys and press  key to set it.
HF34 ~ HF37	GateWay (1~4)	192.168.0.1	
HF38 ~ HF41	SubNet mask (1~4)	255.255.255.0	
HF42	Port Number	5000	
HF43 ~ HF46	SERVER IP ADDRESS 1 ~ 4	192.168.0.100	

No.	Subject	Default	Remarks
HF47	Communication 0 : Server mode - Stream mode (F252-00) - Command mode (F252-01) Sending the data to IP 1 : Client mode Transmit the data to IP that setting on HF43~46 or HF42 Port	0	Able to set using keys and press  key to set it.
HF99	Domestic / Export	0	0 : Domestic 1 : Export

5-4. Test mode






Disconnect all of the devices from the indicator before you proceed with test.

How to enter Test Mode	1) Press F1 4 times for 3 seconds.																	
	2) When SEt-UP displays, press TARE ² .																	
	3) When tEST displays,																	
	4) You can select test various modes as below. .																	
	<table border="1"> <thead> <tr> <th>Key</th><th>Test</th><th>Key</th><th>Test</th></tr> </thead> <tbody> <tr> <td>ZERO ¹</td><td>Load Cell Input Value Check Mode</td><td>HOLD ⁴</td><td>Display Check Mode</td></tr> <tr> <td>TARE ²</td><td>Load cell Input Value Fluctuation Check Mode</td><td>HOLD RESET ⁵</td><td>External Input Check Mode</td></tr> <tr> <td>TARE RESET ³</td><td>Keypad Check Mode</td><td>COUNT ⁷</td><td>Analog Output 4~20mA, 0~10V Check Mode</td></tr> </tbody> </table>			Key	Test	Key	Test	ZERO ¹	Load Cell Input Value Check Mode	HOLD ⁴	Display Check Mode	TARE ²	Load cell Input Value Fluctuation Check Mode	HOLD RESET ⁵	External Input Check Mode	TARE RESET ³	Keypad Check Mode	COUNT ⁷
Key	Test	Key	Test															
ZERO ¹	Load Cell Input Value Check Mode	HOLD ⁴	Display Check Mode															
TARE ²	Load cell Input Value Fluctuation Check Mode	HOLD RESET ⁵	External Input Check Mode															
TARE RESET ³	Keypad Check Mode	COUNT ⁷	Analog Output 4~20mA, 0~10V Check Mode															
	5) CLEAR to cancel or move to previous step.																	

5-4-1. Load Cell Input Value Check Mode


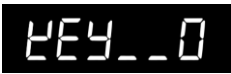



- 1) Press **ZERO** ¹ on the test mode to check value .
 - ※ This mode is to check analog input value converted to digital value. It is normal symptom that the last digit changes.
(-1,048,575~1,048,575 can be displayed)
 - ※ If the value is fluctuating though there is nothing on the scale part or if there is no difference when you load something on the scale part, these may be because of broken load cell, cable connection error, or broken A/D converter of indicator.













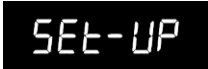


5-4-2. Load Cell Input Value Fluctuation Check Mode

- 1) Press  on the test mode.
 - 2) Press  to display . In this condition, the weight loaded on the scale part converted to digital value so you can check the deviation of change of weight.
-




5-4-3. Keypad Check Mode

You can check key operation on display.



- 1) Press  on the test mode, then  displays.
- 2) When you push a key except for , relevant numbers will show up on display.
- 3) Press  key to back to .

KEY	DISPLAY	KEY	DISPLAY	KEY	DISPLAY
	1		6		10
	2		7		11
	3		8		12
	4		9		Back to 
	5		0		



5-4-4. Display Check Mode

- 1) Press  on the test mode to check display condition.
 - 2) You can check display condition.
 - 3) Press  to back to .
-

5-4-5. External Input Check Mode

- 1) Press  on the test mode, then  displays.
 - 2) Wire External Input terminal and Input common Terminal (IC) to check External Input number on display. .
-

5-4-6. Analog Output 4~20mA, 0~10V Check Mode

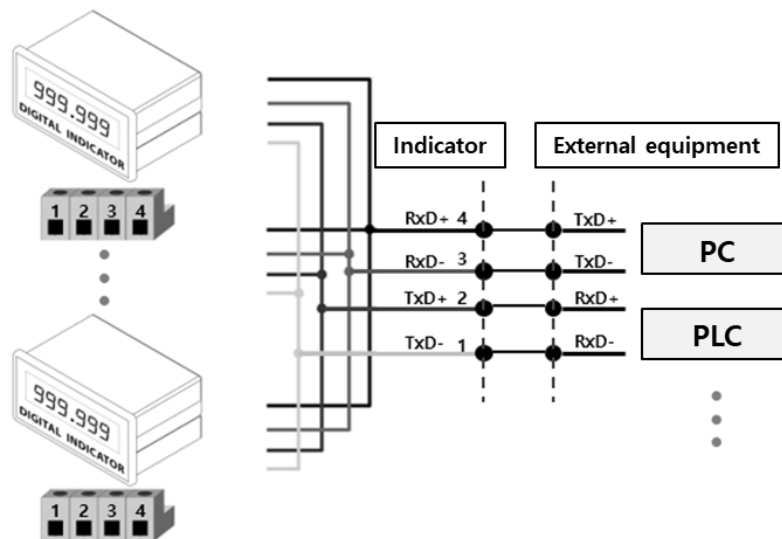
- 1) Press  on the test menu, then  will display.
 - 2) You can proceed with simulation With indicator outputting virtual analog output from In00.000(0mA, 0V) to 23.000(23mA, 10V).
 - 3) A means Analog output 4 ~ 20mA, V means 0 ~ 10V.
- ※ You can check analog output by 0.1 unit with arrow keys.
- If input value is over the maximum, real output will be 100%.
- EX) If the mode is 4~20mA and you input **4.000**, the real output will be **4mA**.
- If the mode is 4~20mA and you input **20.000**, the real output will be **20mA**.
- If the mode is 0~10V and you input **4.700**, the real output will be **4.7V**.
- If the mode is 0~10V and you input **10.000**, the real output will be **10V**.
-

6. Option card

6-1. Serial interface

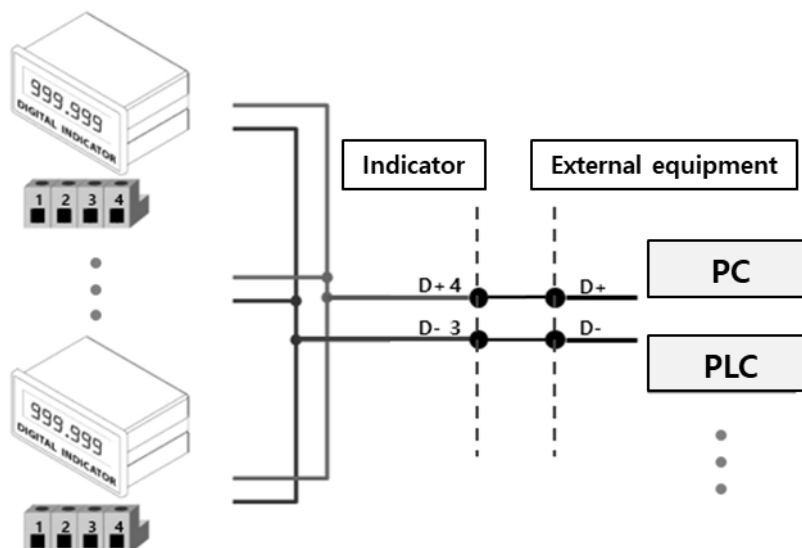
6-1-1. Serial interface OP-01 : RS422

RS422 Interface is available for long-distance communication (within 1km) since it is strong against electric noise. You can connect up to 32EA of devices like PC, PLC, Printer through Multi-Drop Method.



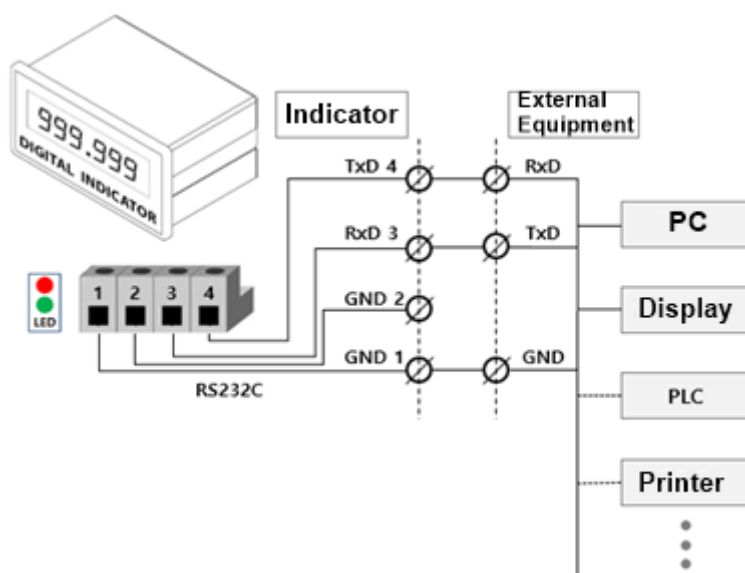
6-1-2. Serial interface OP-02 : RS485

RS485 Interface is available for long-distance communication (within 1km) since it is strong against electric noise. Although this Interface is slow compared to RS422, but you can connect up to 32EA of devices like PC, PLC, Printer through Multi-Drop Method.



6-1-3. Serial interface OP-03 : RS232C

RS232C Interface is adequate for short distance communication like PC, PLC, printer, external display and etc since it is weak in electric noise.



Since Serial Interface is vulnerable to electric noise, Use twisted shielded cable to minimize communication disruption.

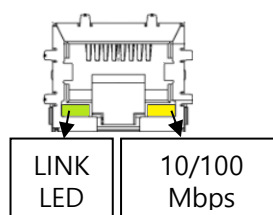
6-2. Ethernet Interface

6-2-1. Ethernet Interface : OP-04

Connect Indicator to External Devices like PC through Ethernet Interface.

(Baud rate: 10/100Mbps)

Function 252-00 (Stream mode)
Function 252-01 (Command mode)
Function 252-03 (Modbus TCP/IP)



6-3. Analog output

6-3-1. Analog Current Output (4~20mA) : OP-05

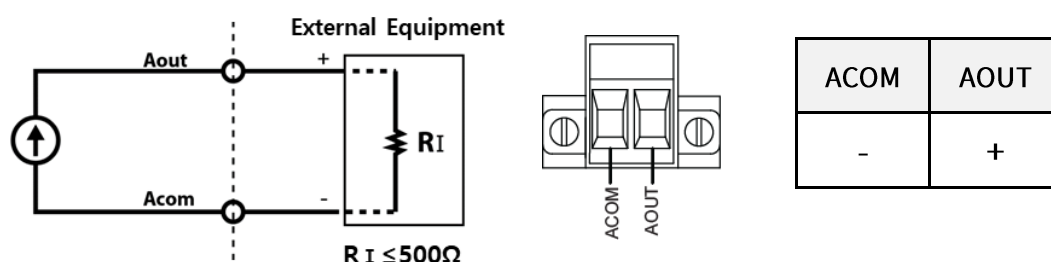
Analog Output Interface 4~20mA transmit displayed weight data to the external devices like PC, recorder, PLC, external display, etc through current output.

Current Output	Accuracy	Temperature Coefficient	Max Load Impedance
4mA ~ 20mA	1/1,000	0.01%/°C	500Ω MAX.



- Analog Output does not work during calibration or Ad-Err.
- If it stop working, the last value maintains.
- It is not adequate for the system which demands high-accuracy over 1/1,000.

1) Circuit Composition and Connection



Analog Current Output Interface transmit analog current(4~20mA) commensurate with the displayed weight

2) Analog Current Output Adjustment (HF20-00)

- ① Default is : 4mA output for Zero, 20mA output for Max Capacity.
- ② If there is a gap in value caused by distance or environment, the way to adjust is as following ③.
- ③ How to adjust Analog Output
 - When the weight is zero but output is not 4mA, You can adjust the gap on HF21.
 - When the weight is Max Capacity but output is not 20mA, You can adjust the gap on HF22.

6-3-2. Analog Voltage Output (0~10V)

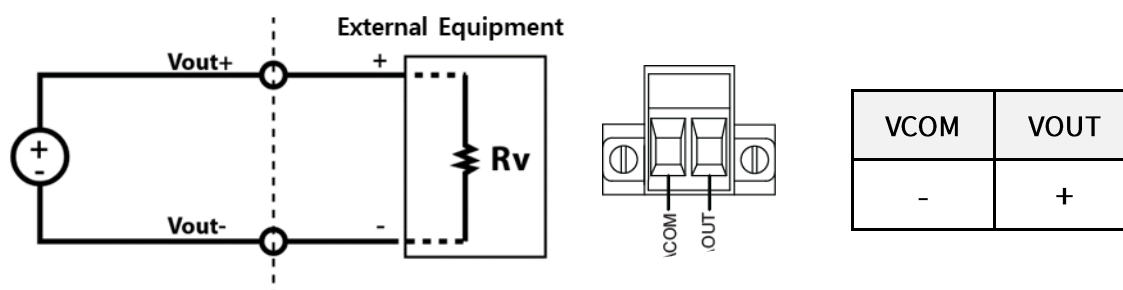
Analog Output Interface 0~10V transmit displayed weight data to the external devices like PC, recorder, PLC, external display, etc through voltage output.

Output voltage	0~10VDC output
Accuracy	1/1,000



- Analog Output does not work during calibration or Ad-Err.
- If it stop working, the last value maintains.
- It is not adequate for the system which demands high-accuracy over 1/1,000.

1) Circuit Composition and Connection



Analog Voltage Output Interface transmit analog voltage(0~10V) commensurate with the displayed weight

2) Analog Voltage Output Adjustment (HF20-01)

- ① Default is : 0V output for Zero, 10V output for Max Capacity.
- ② If there is a gap in value caused by distance or environment, the way to adjust is as following ③.
- ③ How to adjust Analog Output
 - When the weight is zero but output is not 0V, You can adjust the gap on HF21
 - When the weight is Max Capacity but output is not 10V, You can adjust the gap on HF22

※ How to select Analog Output (Iout or Vout)

- (1) Switch Iout or Vout through a deep switch installed on option cards.
- (2) Select Analog Output option on HF20 and save the setting value.

6-4. Parallel interface

6-4-1. BCD IN interface (Part Number External Input card) : OP-07

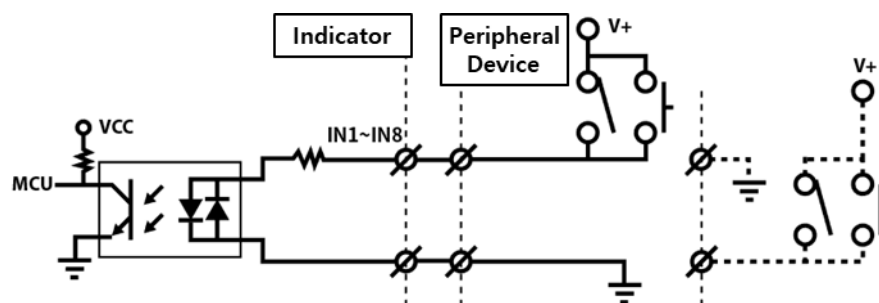
BCD IN Interface is to enter part number of indicator from external equipment such as PC.

1) Connector Pin

Pin No.	Contents	Pin No	Contents
1	IN 1	14	IN 2
2	IN 3	15	IN 4
3	IN 5	16	IN 6
4	IN 7	17	IN 8
5	IN COM	18	
6		19	GND
7	DC12V 50mA	20	
8		21	
9		22	
10		23	
11		24	
12		25	
13			

2) Connector specification : D-type 25p(Female)

3) Dry contact (Zero voltage point) for Input signal



- PLC connection : Power No.7 (DC12V) and No.19(GND).

- Switch connection : Short No. 5 and No. 19, and use Pin No. 7 as INCOM terminal.

6-4-2. BCD OUT interface : OP-08

BCD OUT parallel interface is output current weight as BCD code. This interface can be connected with PC, PL, external display or ETC.

1) Connector pin

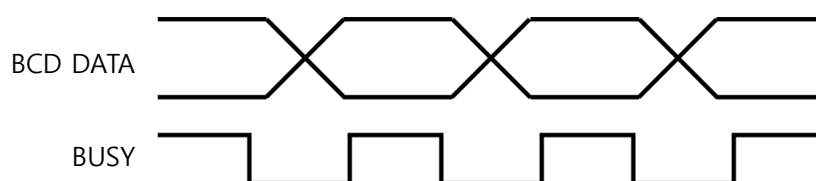
Pin No.	Contents	Pin No	Contents
1	GND	19	1×10^0
2	2×10^0	20	4×10^0
3	8×10^0	21	1×10^0
4	2×10^1	22	4×10^0
5	8×10^1	23	1×10^0
6	2×10^2	24	4×10^0
7	8×10^2	25	1×10^0
8	2×10^3	26	4×10^0
9	8×10^3	27	1×10^0
10	2×10^4	28	4×10^0
11	8×10^4	29	1×10^0
12	2×10^5	30	4×10^0
13	8×10^5	31	NET/GROSS
14	GND	32	GND
15	Hold	33	Division 0.000
16	Division 0.00	34	Division 0.0
17	Polarity	35	BUSY
18	-	36	O.L

2) Connector specification : Champ 36(FEMALE)

3) BCD OUT output specification : Open-collector output

4) Hold Input has to be connected as open collector output and dry contact output. When Hold is input, BCD-OUT value will be hold.

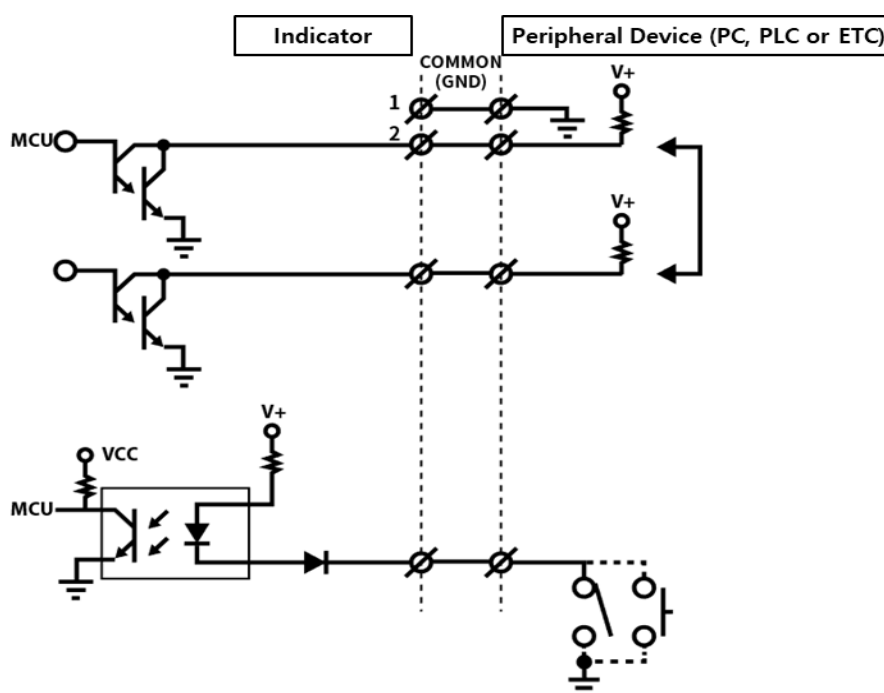
5) BCD out time chart



6) Signal logic

	Factory default	Contents	Remark
BDC data	Positive	Positive Negative	Select by the switch on the BCD OUT PCB.
Polarity	When it is “-“, “H” is output	When “-“ is output, open ”H” will be output.	
O.L output	When it is “OL“, “H” is output.	When it is Over-load, open “H” will be output.	
Busy	When it is “Busy“, “H” is output.	If converting of BCD OUT value is completed, “busy” signal is keeping as H. Then it is changed to “L” before starting BCD converting.	
Hold	When it is BCD data “hold“, “L” is output.	If you want BCD data to be “hold”, input signal will be input. (Contact close)	

7) If you want BCD out card as TTL level or voltage source output, please contact to SEWHA CNM Co., Ltd. (Customized product)



6-5. Data Storage Device (SD memory card)

6-5-1. Data Storage Device (SD memory card) : OP-09

Data storage device saves the weight data according to F102 setting.



SD memory card has to be installed in Option 2 location.

1) Weighing Data Format (File name: N + Creation date)(ex : N160114)

Save data on SD memory card according to F102 setting.

DATE	TIME	ID	PART	SERIAL	GROSS WEIGHT	TARE WEIGHT	NET WEIGHT	UNIT
2016-01-01	12:18:04	1	1	1	200	20	180	kg
2016-01-01	12:18:10	1	1	2	100	10	90	kg
2016-01-01	12:18:10	1	1	3	300	5	295	kg

2) Sub-total weighing data format (File name: S + Creation date)(ex : S160114)

Save Sub-total weight data on SD memory card when input “Print Sub-total”

DATE	TIME	ID	PART	SUB TOTAL COUNT	SUB TOTAL WEIGHT	UNIT
2016-01-01	12:00:30	1	1	10	6000	kg
2016-01-01	12:00:30	1	2	10	5000	kg

3) Grand-total weighing data format (File name: T + Creation date)(ex : T160114)

Save Total weight data on SD memory card when input “Print Total”

DATE	TIME	TOTAL COUNT	TOTAL WEIGHT	UNIT
2016-01-01	12:27:30	17	4620	kg
ID	PART No.	SERIAL	WEIGHT	UNIT
1	1	5	1207	kg
1	2	8	2383	kg
1	3	2	506	kg
1	4	2	524	kg

4) SD Memory Specification

Memory	Model	Form factor	Class
8G	SanDisk SDHC memory card 8G	SDHC	4



- Recommend you to use the specified SD memory card.
- Back up the files and format the SD memory regularly since USB Memory has capacity.
- Right-click on the removable disk drive, run the format, select FAT32 in the file system, and press Start.

6-6. Option card combination

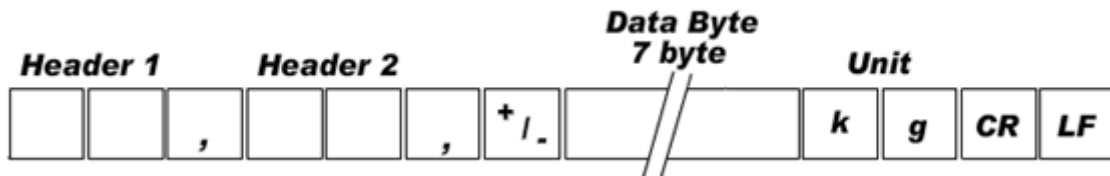
Maximum 2EA of option card can be installed. Below combination is available.

Classification	OP-01	OP-02 OP-03	OP-04	OP-05 OP-06	OP-07	OP-08	OP-09
	Serial (RS232)	Serial (RS422, RS485)	Ether- net	Analog out	BCD IN	BCD OUT	SD memory card
Serial RS232	X	X	O	O	O	O	O
Serial RS422, RS485	X	X	O	O	O	O	O
Ethernet	O	O	X	O	O	X	O
Analog out	O	O	O	X	O	O	O
BCD IN	O	O	O	O	X	O	O
BCD OUT	O	O	X	O	O	X	O
SD memory card	O	O	O	O	O	O	X

7. Communication Data Format

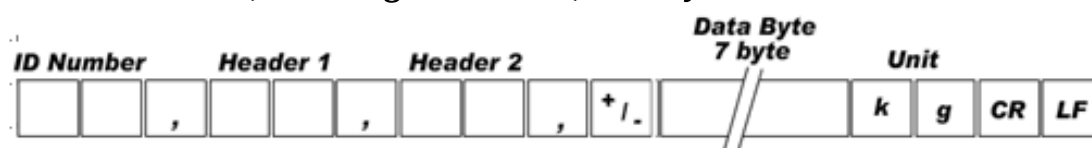
7-1. Stream Mode

7-1-1 Format 1 (excluding ID number) – 18 byte



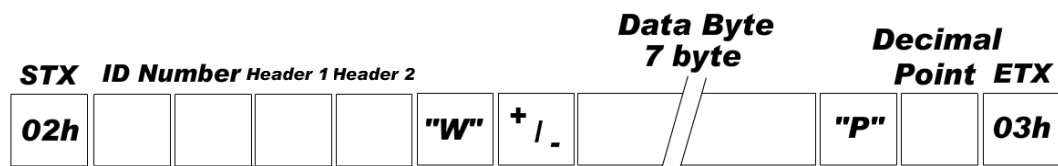
Classification	Contents						
Header1 (2Byte)	OL : Overloaded ST : Stable US : Unstable						
Header2 (2Byte)	NT : NET-WEIGHT GS : GROSS-WEIGHT						
Sign (1Byte)	Mark						
Weight Data (7Byte)	Current weight						
UNIT (2Byte)	kg - <table border="1"><tr><td>k</td><td>g</td></tr></table> g - <table border="1"><tr><td></td><td>g</td></tr></table> ton- <table border="1"><tr><td></td><td>t</td></tr></table>	k	g		g		t
k	g						
	g						
	t						
CR (1byte)	Carriage Return						
LF (1byte)	Line Feed						
Example	ASCII : ST,NT,+0000.00kg CR LF HEX : 53h 54h 2Ch 4Eh 54h 2Ch 2Bh 30h 30h 30h 30h 2Eh 30h 30h 6Bh 67h 0Dh 0Ah						

7-1-2. Format 2 (including ID number) – 21 byte



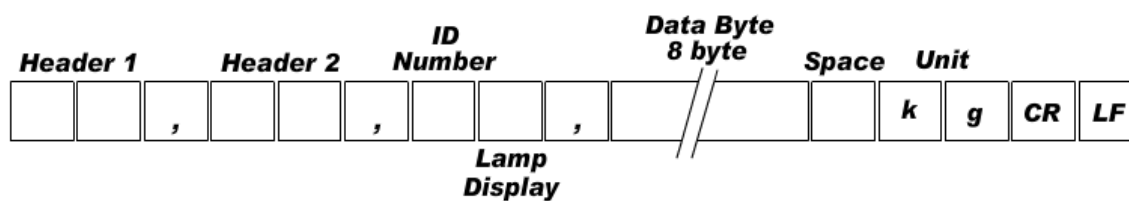
Classification	Contents						
ID Number (2Byte)	ID number						
Header1 (2Byte)	OL : Overloaded ST : Stable US : Unstable						
Header2 (2Byte)	NT : NET-WEIGHT GS : GROSS-WEIGHT						
Sign (1Btye)	Mark						
Weight Data (7Byte)	Sign						
UNIT (2Byte)	kg - <table border="1"><tr><td>k</td><td>g</td></tr></table> g - <table border="1"><tr><td></td><td>g</td></tr></table> ton- <table border="1"><tr><td></td><td>t</td></tr></table>	k	g		g		t
k	g						
	g						
	t						
CR (1byte)	Carriage Return						
LF (1byte)	Line Feed						
Example	ASCII : 01,ST,NT,+0000.00kg CR LF HEX : 30h 31h 2Ch 53h 54h 2Ch 4Eh 54h 2Ch 2Bh 30h 30h 30h 30h 2Eh 30h 30h 6Bh 67h 0Dh 0Ah						

7-1-3. Format 3 (including ID number) – 17 byte



Classification	Contents
STX (1Byte)	Start of Text
ID Number (2Byte)	
Header1 (1Byte)	O : Overloaded S : Stable U : Unstable
Header2 (1Byte)	N : NET-WEIGHT G : GROSS-WEIGHT
"W" (1Byte)	Current weight separator
Sign (1Byte)	Mark
Weight Data (7Byte)	Current weight
"P" (1Byte)	Decimal point separator
Decimal Point (1Byte)	
ETX (1Byte)	End of Text
Example	ASCII : STX 01SNW+0000000P2 ETX HEX : 02h 30h 31h 53h 4Eh 57h 2Bh 30h 30h 30h 30h 30h 30h 30h 50h 32h 03h

7-1-4. Format 4 (including ID number) – 22 byte



Classification	Contents
Header1 (2Byte)	OL : Overloaded ST : Stable US : Unstable
Header2 (2Byte)	NT : NET-WEIGHT GS : GROSS-WEIGHT
ID Number (1Byte)	ID number
Lamp Display (1Byte)	Lamp status display
Weight Data (8Byte)	Current weight including mark (Mark for minus '-' only)
UNIT (2Byte)	kg : kg g : g t : ton
CR (1byte)	Carriage Return
LF (1byte)	Line Feed
Example	ASCII : ST,NT,?,0.12 kg CR LF HEX : 53h 54h 2Ch 4Eh 54h 2Ch 01h E1h 2Ch 20h 20h 20h 30h 2Eh 31h 32h 20h 6Bh 67h 0Dh 0Ah

※ Lamp display

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

7-2. Command mode

Command judgement judges data 06h (ACK), 15h (NAK) and Error Code which starts with 02h(STX) and ends with 03h(ETX).

7-2-1. Read mode

Current Weight (Displayed Weight)		
Transmit	Format : STX(1) ID(2) RCWT(4) ETX(1) ASCII : STX 01RCWT ETX HEX : 02h 30h 31h 52h 43h 57h 54h 03h	8 Byte
Respond	Format : STX(1) ID(2) RCWT(4) State1(1) State 2(1) P(1) Decimal Point(1) Mark(1) Current Weight(6) Unit(2) ETX(1) ASCII : STX 01RCWTSNP2+001234kg ETX HEX : 02h 30h 31h 52h 43h 57h 54h 53h 4Eh 50h 32h 2Bh 30h 30h 31h 32h 33h 34h 6Bh 67h 03h	21 Byte
	State 1: O(Overloaded), S(Stable), U(Unstable) State 2: N(Net Weight), G(Gross Weight)	
Current Weight (Memory)		
Transmit	Format : STX(1) ID(2) RCWD(4) ETX(1) ASCII : STX 01RCWD ETX HEX : 02h 30h 31h 52h 43h 57h 44h 03h	8 Byte
Respond	Format : STX(1) ID(2) RCWD(4) P(1) Decimal Point(1) Date(6) Time(6) Part Number(2) Weighing Count(6) Mark(1) Tare Weight(6) Mark(1) Current Weight(6) Unit(2) ETX(1) ASCII : STX 01RCWDP217110112303501012345+012345+012345kg ETX HEX : 02h 30h 31h 52h 43h 57h 44h 50h 32h 31h 37h 31h 31h 30h 31h 31h 32h 33h 30h 33h 35h 30h 31h 30h 31h 32h 33h 34h 35h 2Bh 30h 31h 32h 33h 34h 35h 2Bh 30h 31h 32h 33h 34h 35h 6Bh 67h 03h	46 Byte

Sub-total		
Transmit	Format : STX(1) ID(2) RSUB(4) ETX(1) ASCII : STX 01RSUB ETX HEX : 02h 30h 31h 52h 53h 55h 42h 03h	8 Byte
Respond	Format : STX(1) ID(2) RSUB(4) P(1) Decimal Point(1) Part Number(2) Sub-total Count(6) Sub-total(10) Unit(2) ETX(1) ASCII : STX 01RSUBP2010123450123456789kg ETX HEX : 02h 30h 31h 52h 53h 55h 42h 50h 32h 30h 31h 30h 31h 32h 33h 34h 35h 30h 31h 32h 33h 34h 35h 36h 37h 38h 39h 6Bh 67h 03h	30 Byte
Total		
Transmit	Format : STX(1) ID(2) RGRD(4) ETX(1) ASCII : STX 01RGRD ETX HEX : 02h 30h 31h 52h 47h 52h 44h 03h	8 byte
Respond	Format : STX(1) ID(2) RGRD(4) P(1) Decimal Point(1) Total Count(6) Total(10) Unit(2) ETX(1) ASCII : STX 01RGRDP20123450123456789kg ETX HEX : 02h 30h 31h 52h 47h 52h 44h 50h 32h 30h 31h 32h 33h 34h 35h 30h 31h 32h 33h 34h 35h 36h 37h 38h 39h 6Bh 67h 03h	28 byte
Sub-total Count		
Transmit	Format : STX(1) ID(2) RSNO(4) ETX(1) ASCII : STX 01RSNO ETX HEX : 02h 30h 31h 52h 53h 4Eh 4Fh 03h	8 Byte
Respond	Format : STX(1) ID(2) RSNO(4) Sub-total Count(6) ETX(1) ASCII : STX 01RSNO012345 ETX HEX : 02h 30h 31h 52h 53h 4Eh 4Fh 30h 31h 32h 33h 34h 35h 03h	14 Byte

Time		
Transmit	Format : STX(1) ID(2) RTIM(4) ETX(1) ASCII : STX 01RTIM ETX HEX : 02h 30h 31h 52h 54h 49h 4Dh 03h	8 Byte
Respond	Format : STX(1) ID(2) RTIM(4) Time(6) ETX(1) ASCII : STX 01RTIM123035 ETX HEX : 02h 30h 31h 52h 54h 49h 4Dh 31h 32h 33h 30h 33h 35h 03h	14 Byte
Date		
Transmit	Format : STX(1) ID(2) RDATE(4) ETX(1) ASCII : STX 01RDATE ETX HEX : 02h 30h 31h 52h 44h 41h 54h 03h	8 Byte
Respond	Format : STX(1) ID(2) RDATE(4) Date(6) ETX(1) ASCII : STX 01RDATE171101 ETX HEX : 02h 30h 31h 52h 44h 41h 54h 31h 37h 31h 31h 30h 31h 03h	14 Byte
Tare Weight		
Transmit	Format : STX(1) ID(2) RTAR(4) ETX(1) ASCII : STX 01RTAR ETX HEX : 02h 30h 31h 52h 54h 41h 52h 03h	8 Byte
Respond	Format : STX(1) ID(2) RTAR(4) P(1) Decimal Point(1) Mark(1) Tare Weight(6) ETX(1) ASCII : STX 01RTARP2+012345 ETX HEX : 02h 30h 31h 52h 54h 41h 52h 50h 32h 2Bh 30h 31h 32h 33h 34h 35h 03h	17 Byte
Current Part Number		
Transmit	Format : STX(1) ID(2) RPNO(4) ETX(1) ASCII : STX 01RPNO ETX HEX : 02h 30h 31h 52h 50h 4Eh 4Fh 03h	8 Byte
Respond	Format : STX(1) ID(2) RPNO(4) Part Number(2) ETX(1) ASCII : STX 01RPNO01 ETX HEX : 02h 30h 31h 52h 50h 4Eh 4Fh 30h 31h 03h	10 Byte

7-2-2. Write mode

Error code	
0 : Normality	1 : Check-Sum Error
2 : Received Data length Error	3 : Received Data range Error
4 : Write prohibit error (It is not allowed during run process)	

Zero Setting			
Transmit	Format : STX(1) ID(2) WZER(4) ETX(1) ASCII : STX 01WZER ETX HEX : 02h 30h 31h 57h 5Ah 45h 52h 03h		8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1) ASCII : STX 01 NAK 2 ETX HEX : 02h 30h 31h 15h 32h 03h	
Tare Setting			
Transmit	Format : STX(1) ID(2) WTAR(4) ETX(1) ASCII : STX 01WTAR ETX HEX : 02h 30h 31h 57h 54h 41h 52h 03h		8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1) ASCII : STX 01 NAK 2 ETX HEX : 02h 30h 31h 15h 32h 03h	

Tare Reset			
Transmit	Format : STX(1) ID(2) WTRS(4) ETX(1) ASCII : STX 01WTRS ETX HEX : 02h 30h 31h 57h 54h 52h 53h 03h		8 Byte
Respond	Normal	Format: STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
Hold Setting			
Transmit	Format : STX(1) ID(2) WHOL(4) ETX(1) ASCII : STX 01WHOL ETX HEX : 02h 30h 31h 57h 48h 4Fh 4Ch 03h		8 Byte
Respond	Normal	Format: STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
	Error	Format: STX(1) ID(2) NAK(1) ERROR(1) ETX(1) ASCII : STX 01 NAK 2 ETX HEX : 02h 30h 31h 15h 32h 03h	
Hold Reset			
Transmit	Format : STX(1) ID(2) WHRS(4) Part Number(2) ETX(1) ASCII : STX 01WHRS ETX HEX : 02h 30h 31h 57h 48h 52h 53h 03h		8 Byte
Respond	Normal	Format: STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
	Error	Format: STX(1) ID(2) NAK(1) ERROR(1) ETX(1) ASCII : STX 01 NAK 2 ETX HEX : 02h 30h 31h 15h 32h 03h	

Print			
Transmit	Format : STX(1) ID(2) WPRT(4) ETX(1) ASCII : STX 01WPRT ETX HEX : 02h 30h 31h 57h 50h 52h 54h 03h		8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1) ASCII : STX 01 NAK 2 ETX HEX : 02h 30h 31h 15h 32h 03h	
Print Sub-total			
Transmit	Format : STX(1) ID(2) WSPR(4) ETX(1) ASCII : STX 01WSPR ETX HEX : 02h 30h 31h 57h 53h 50h 52h 03h		8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1) ASCII : STX 01 NAK 2 ETX HEX : 02h 30h 31h 15h 32h 03h	
Delete Sub-total			
Transmit	Format : STX(1) ID(2) WSTC(4) ETX(1) ASCII : STX 01WSTC ETX HEX : 02h 30h 31h 57h 53h 54h 43h 03h		8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1) ASCII : STX 01 NAK 2 ETX HEX : 02h 30h 31h 15h 32h 03h	

Print Total			
Transmit	Format : STX(1) ID(2) WGPR(4) ETX(1)		8 Byte
	ASCII : STX 01WGPR ETX		
	HEX : 02h 30h 31h 57h 47h 50h 52h 03h		
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1)	6 Byte
		ASCII : STX 01 ACK 0 ETX	
		HEX : 02h 30h 31h 06h 30h 03h	
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1)	
ASCII : STX 01 NAK 2 ETX			
HEX : 02h 30h 31h 15h 32h 03h			
Delete Total			
Transmit	Format : STX(1) ID(2) WGTC(4) ETX(1)		8 Byte
	ASCII : STX 01WGTC ETX		
	HEX : 02h 30h 31h 57h 47h 54h 43h 03h		
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1)	6 Byte
		ASCII : STX 01 ACK 0 ETX	
		HEX : 02h 30h 31h 06h 30h 03h	
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1)	
ASCII : STX 01 NAK 2 ETX			
HEX : 02h 30h 31h 15h 32h 03h			
Time Setting			
Transmit	Format : STX(1) ID(2) WTIM(4) TIME(6) ETX(1)		14 Byte
	ASCII : STX 01WTIM123035 ETX		
	HEX : 02h 30h 31h 57h 54h 49h 4Dh 31h 32h 33h 30h 33h 35h 03h		
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1)	6 Byte
		ASCII : STX 01 ACK 0 ETX	
		HEX : 02h 30h 31h 06h 30h 03h	
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1)	
ASCII : STX 01 NAK 2 ETX			
HEX : 02h 30h 31h 15h 32h 03h			

Date Setting			
Transmit	Format : STX(1) ID(2) WDAT(4) DATE(6) ETX(1) ASCII : STX 01WDAT171101 ETX HEX : 02h 30h 31h 57h 44h 41h 54h 31h 37h 31h 31h 30h 31h 03h		14 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1) ASCII : STX 01 NAK 2 ETX HEX : 02h 30h 31h 15h 32h 03h	
Part Number Change			
Transmit	Format : STX(1) ID(2) WPNO(4) Part Number(2) ETX(1) ASCII : STX 01WPNO10 ETX HEX : 02h 30h 31h 57h 50h 4Eh 4Fh 31h 30h 03h		10 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ERROR(1) ETX(1) ASCII : STX 01 ACK 0 ETX HEX : 02h 30h 31h 06h 30h 03h	6 Byte
	Error	Format : STX(1) ID(2) NAK(1) ERROR(1) ETX(1) ASCII : STX 01 NAK 2 ETX HEX : 02h 30h 31h 15h 32h 03h	

7-3. Command mode (compatible with SI4000 series)

7-3-1. Read command

Current Weight (Displayed Weight)		
Transmit	Format : STX(1) ID(2) RCWT(4) ETX(1) ASCII : STX 01RCWT ETX HEX : 02h 30h 31h 52h 43h 57h 54h 03h	8 Byte
Respond	Format : STX(1) ID(2) RCWT(4) State1(2) State2(2) Sign(1) Current weight(7) Unit(2) ETX(1) ASCII : STX 01RCWTST,NT,+0123.45kg ETX HEX : 02h 30h 31h 52h 43h 57h 54h 53h 54h 2Ch 4Eh 54h 2Ch 2Bh 30h 31h 32h 33h 2Eh 34h 35h 6Bh 67h 03h	24 Byte
	State 1: OL(Current weight is over than max capacity weight), ST(Stable weight), US(Unstable weight) State 2: NT(Net weight), GS(Gross weight)	
Current Weight (Memory)		
Transmit	Format : STX(1) ID(2) RCWD(4) ETX(1) ASCII : STX 01RCWD ETX HEX : 02h 30h 31h 52h 43h 57h 44h 03h	8 Byte
Respond	Format : STX(1) ID(2) RCWD(4) Date(6) Time(6) Part number(2) Weighing count(6) Tare weight(7) Sign(1) Current weight(7) Unit(2) ETX(1) ASCII : STX 01RCWD171101123035010123450123.45+0123.45kg ETX HEX : 02h 30h 31h 52h 43h 57h 44h 31h 37h 31h 31h 30h 31h 31h 32h 33h 30h 33h 35h 30h 31h 30h 31h 32h 33h 34h 35h 30h 31h 32h 33h 2Eh 34h 35h 2Bh 30h 31h 32h 33h 2Eh 34h 35h 6Bh 67h 03h	45 Byte

Sub-total		
Transmit	Format : STX(1) ID(2) RSUB(4) ETX(1) ASCII : STX 01RSUB ETX HEX : 02h 30h 31h 52h 53h 55h 42h 03h	8 Byte
Respond	Format : STX(1) ID(2) RSUB(4) Part number(2) Sub-total weighing count(6) Sub-total weight(11) Unit(2) ETX(1) ASCII : STX 01RSUB0101234501234567.89kg ETX HEX : 02h 30h 31h 52h 53h 55h 42h 30h 31h 30h 31h 32h 33h 34h 35h 30h 31h 32h 33h 34h 35h 36h 37h 2Eh 38h 39h 6Bh 67h 03h	29 Byte
Sub-total Count		
Transmit	Format : STX(1) ID(2) RSNO(4) ETX(1) ASCII : STX 01RSNO ETX HEX : 02h 30h 31h 52h 53h 4Eh 4Fh 03h	8 Byte
Respond	Format : STX(1) ID(2) RSNO(4) Sub-total weighing count(6) ETX(1) ASCII : STX 01RSNO012345 ETX HEX : 02h 30h 31h 52h 53h 4Eh 4Fh 30h 31h 32h 33h 34h 35h 03h	14 Byte
Total		
Transmit	Format : STX(1) ID(2) RGRD(4) ETX(1) ASCII : STX 01RGRD ETX HEX : 02h 30h 31h 52h 47h 52h 44h 03h	8 byte
Respond	Format : STX(1) ID(2) RGRD(4) Part number(2) Grand-total weighing count(6) Grand-total accumulated weight (11) Unit(2) ETX(1) ASCII : STX 01RGRD0101234501234567.89kg ETX HEX : 02h 30h 31h 52h 47h 52h 44h 30h 31h 30h 31h 32h 33h 34h 35h 30h 31h 32h 33h 34h 35h 36h 37h 2Eh 38h 39h 6Bh 67h 03h	29 byte
Time		
Transmit	Format : STX(1) ID(2) RTIM(4) ETX(1) ASCII : STX 01RTIM ETX HEX : 02h 30h 31h 52h 54h 49h 4Dh 03h	8 Byte
Respond	Format : STX(1) ID(2) RTIM(4) Current time(6) ETX(1) ASCII : STX 01RTIM123035 ETX HEX : 02h 30h 31h 52h 54h 49h 4Dh 31h 32h 33h 30h 33h 35h 03h	14 Byte

Date		
Transmit	Format : STX(1) ID(2) RDAT(4) ETX(1) ASCII : STX 01RDAT ETX HEX : 02h 30h 31h 52h 44h 41h 54h 03h	8 Byte
Respond	Format : STX(1) ID(2) RDAT(4) Current date(6) ETX(1) ASCII : STX 01RDAT171101 ETX HEX : 02h 30h 31h 52h 44h 41h 54h 31h 37h 31h 31h 30h 31h 03h	14 Byte
Tare Weight		
Transmit	Format : STX(1) ID(2) RTAR(4) ETX(1) ASCII : STX 01RTAR ETX HEX : 02h 30h 31h 52h 54h 41h 52h 03h	8 Byte
Respond	Format : STX(1) ID(2) RTAR(4) Tare weight(7) ETX(1) ASCII : STX 01RTAR0123.45 ETX HEX : 02h 30h 31h 52h 54h 41h 52h 30h 31h 32h 33h 2Eh 34h 35h 03h	15 Byte
Current Part Number		
Transmit	Format : STX(1) ID(2) RPNO(4) ETX(1) ASCII : STX 01RPNO ETX HEX : 02h 30h 31h 52h 50h 4Eh 4Fh 03h	8 Byte
Respond	Format : STX(1) ID(2) RPNO(4) Part number(2) ETX(1) ASCII : STX 01RPNO01 ETX HEX : 02h 30h 31h 52h 50h 4Eh 4Fh 30h 31h 03h	10 Byte

7-3-2. Write command

Zero Setting					
Transmit	Format : STX(1) ID(2) WZER(4) ETX(1) ASCII : STX 01WZER ETX HEX : 02h 30h 31h 57h 5Ah 45h 52h 03h				8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte
Tare Setting					
Transmit	Format : STX(1) ID(2) WTAR(4) ETX(1) ASCII : STX 01WTAR ETX HEX : 02h 30h 31h 57h 54h 41h 52h 03h				8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte
Tare Reset					
Transmit	Format : STX(1) ID(2) WTRS(4) ETX(1) ASCII : STX 01WTRS ETX HEX : 02h 30h 31h 57h 54h 52h 53h 03h				8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte
Print					
Transmit	Format : STX(1) ID(2) WPRT(4) ETX(1) ASCII : STX 01WPRT ETX HEX : 02h 30h 31h 57h 50h 52h 54h 03h				8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte

Print Sub-total					
Transmit	Format : STX(1) ID(2) WSPR(4) ETX(1) ASCII : STX 01WSPR ETX HEX : 02h 30h 31h 57h 53h 50h 52h 03h				8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte
Delete Sub-total					
Transmit	Format : STX(1) ID(2) WSTC(4) ETX(1) ASCII : STX 01WSTC ETX HEX : 02h 30h 31h 57h 53h 54h 43h 03h				8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte
Print Total					
Transmit	Format : STX(1) ID(2) WGPR(4) ETX(1) ASCII : STX 01WGPR ETX HEX : 02h 30h 31h 57h 47h 50h 52h 03h				8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte
Delete Total					
Transmit	Format : STX(1) ID(2) WGTC(4) ETX(1) ASCII : STX 01WGTC ETX HEX : 02h 30h 31h 57h 47h 54h 43h 03h				8 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte

Time Setting					
Transmit	Format : STX(1) ID(2) WTIM(4) TIME(6) ETX(1) ASCII : STX 01WTIM123035 ETX HEX : 02h 30h 31h 57h 54h 49h 4Dh 31h 32h 33h 30h 33h 35h 03h				14 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte
Date Setting					
Transmit	Format : STX(1) ID(2) WDAT(4) DATE(6) ETX(1) ASCII : STX 01WDAT171101 ETX HEX : 02h 30h 31h 57h 44h 41h 54h 31h 37h 31h 31h 30h 31h 03h				14 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte
Part Number Change					
Transmit	Format : STX(1) ID(2) WPNO(4) Part number(2) ETX(1) ASCII : STX 01WPNO10 ETX HEX : 02h 30h 31h 57h 50h 4Eh 4Fh 31h 30h 03h				10 Byte
Respond	Normal	Format : STX(1) ID(2) ACK(1) ETX(1) ASCII : STX 01 ACK ETX HEX : 02h 30h 31h 06h 03h	Error	Format : STX(1) ID(2) NAK(1) ETX(1) ASCII : STX 01 NAK ETX HEX : 02h 30h 31h 15h 03h	5 Byte

※ How to calculate CHECK SUM

Check sum is a remainder when Sum of HEX value of the data from STX to ETX and the value is into 100.

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) and the remainder is A6h.

This value is converted to ASCII and transferred to 41(A) 36(6).

Command Judgement of Command mode judges and outputs 06h(ACK) and 15h(NAK), Error code between the data which starts with 02h(STX) and ends with 03h(ETX)

7-4. Modbus

- RO : Read Only
- RW : Read Write
- Setting value for Each Part Number cannot be over Max Capacity
ex) If you want to set 35.00kg, input 3500 (0xDAC)
- Input 6 digits to set Date and Time
ex) Input 140101 (0x22345) for 2014 January 1st
Input 155017 (0x25D89) for 3:50:17 pm
- Refer to Memory Register Table below for 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

7-4-1. Data Address Map

Contents	Address		Length	Feature
Decimal Point	159	0x9F	2	R
Current Weight	160	0xA0	2	R
Tare Weight	162	0xA2	2	R
Key Input Tare Weight	164	0xA4	2	R/W
Hold Weight	168	0xA8	2	R
External Input	170	0xAA	2	R/W
Lamp	172	0xAC	2	R
Error	180	0xB4	2	R
Weighing Count Of Current P/N	182	0xB6	2	R
Cumulative Weight of Current P/N	184	0xB8	2	R
Total Count	186	0xBA	2	R
Total	188	0xBC	2	R

Contents	Address	Length	Feature	
P/N 1 Weighing Count	190	0xBE	2	R
P/N 1 Cumulative Weight	192	0xC0	2	R
P/N 2 Cumulative Weight	194	0xC2	2	R
~	~	~	~	~
P/N 50 Weighing Count	384	0x180	2	R
P/N 50 Cumulative Weight	386	0x182	2	R
Date	388	0x184	2	R/W
Time	390	0x186	2	R/W
Key	392	0x188	1	R/W
P/N	395	0x18B	1	R/W

7-4-2. External Input Data Map

1bit	2bit	3bit	4bit	5bit	6bit	7bit	8bit
IN 1	IN 2	IN 3	IN 4	IN 5	IN 6		
9bit	10bit	11bit	12bit	13bit	14bit	15bit	16bit

7-4-3. Lamp Data Map

1bit	2bit	3bit	4bit	5bit	6bit	7bit	8bit
Stable	Zero	Tare	Hold	TXD	RXD	PRT	BAT
9bit	10bit	11bit	12bit	13bit	14bit	15bit	16bit
SD_CAD	RUN	(-) Sign	HI	LO			IN1
17bit	18bit	19bit	20bit	21bit	22bit	23bit	24bit
IN2	IN3	IN4	IN5	IN6			Unit 'oz'
25bit	26bit	27bit	28bit	29bit	30bit	31bit	32bit
Unit 'lb'	Unit 'k'	Unit 'g'	Unit 't'				

7-4-4. Key Data Map

0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08
Zero	Tare	Tare reset	Hold	Hold reset			
0x09	0x10	0x11	0x12	0x13	0x14	0x15	0x16
	Print	Tare / tare reset	Hold / hold reset				

7-5. Print format

It can be connect the indicator to all kinds of Serial Interface printers, but recommend you to use SE7200, SE7300 (30 columns) since the print format is programmed and fixed with the models.

	Korean (F120-00)	English (F120-01)
Continuous F121-00	<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>
Continuous (Tare weight, Net / Current weight) F121-01	<pre> ===== 날짜 : 2011-05-10 시간 : 18:00:10 장비 품번 순번 총중량 용기값 순중량 01 01 1 3.000 kg 1.501 kg 1.499 kg 01 01 2 3.024 kg 1.501 kg 1.523 kg 01 01 3 3.039 kg 1.501 kg 1.538 kg </pre>	<pre> ===== DATE : 2011-05-10 TIME : 18:00:10 ID PART SERIAL GROSS WEIGHT TARE WEIGHT NET WEIGHT 01 01 1 3.000 kg 1.501 kg 1.499 kg 01 01 2 3.024 kg 1.501 kg 1.523 kg 01 01 3 3.039 kg 1.501 kg 1.538 kg </pre>
Single F121-02	<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>

Single (Tare weight, Net / Current weight) F121-03	<pre> ===== 날짜 : 2011-05-10 시간 : 18:00:10 장비 품번 순번 총중량 용기값 순중량 01 01 1 3.000 kg 1.501 kg 1.499 kg </pre>	<pre> ===== DATE : 2011-05-10 TIME : 18:00:10 ID PART SERIAL GROSS WEIGHT TARE WEIGHT NET WEIGHT 01 01 1 3.000 kg 1.501 kg 1.499 kg </pre>
Single Array (Tare weight, Net / Current weight) F121-04	<pre> ===== 날짜 : 2018-07-16 시간 : 15:40:16 장비 : 1 품번 : 1 순번 : 1 총중량 : 2.99 kg 용기중량 : 1.00 kg 순중량 : 1.99 kg </pre>	<pre> ===== DATE : 2018-07-16 TIME : 15:40:16 ID : 1 PART : 1 SERIAL : 1 GROSS WEIGHT : 2.99 kg TARE WEIGHT : 1.00 kg NET WEIGHT : 1.99 kg </pre>
Total	<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 총계량횟수 : 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>

Date and Time will be printed when it is number first in spite of Continuous format setting.

8. Error & treatment

8-1. Error during Load Cell Installation

Error	Causing	Treatment	Remark
Weight is unstable	1. Load cell broken 2. Load cell isolation resistance error 3. There is interruption on the weighing part 4. Summing board broken	1. Measure input/output resistance of Load cell. 2. Measure Load cell isolation resistance 3. Change Summing Board 4. Make sure that there is nothing on the scale part.	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 increases regularly or does not returns to Zero.	1. Load cell error 2. Load cell connection Error	1. Check load cell connection 2. Measure resistance value of load cell	
Weight value is Minus (-)	1. Load cell Output wires (SIG+, SIG-) are switched	1. Check load cell connection	
“UnPASS” displays	1. Load cell broken or Indicator connection error	1. Check load cell 2. Check load cell connection	
	1. Power has been supplied when the scale part is not empty.	1. Remove weight on the load cell	
“OL” display (OverLoad)	1. Load cell broken or Indicator connection Error 2. Weight over Max Capacity	1. Check load cell 2. Check load cell connection 3. Remove overloaded weight	

8-2. Error during Calibration

Display	Cause
Er-004	Standard weight value is over than Max Capacity
Er-005	Standard weight value is less than 10% of Max Capacity
Er-009	There is continuous vibration on the weighing part during calibration.
Er-010	Under “F-function” model, set value is “N.A”
Er-011	Exceed Tare range
Er-012	Exceed Near Zero range

8-3. Error and Treatment

Following is weighing process error and the indicator cannot measure precise weight in these cases.

Display	Cause	Treatment
“Ad-Err” or “OL”	1. Load cell broken 2. Load cell cable broken 3. Load cell connection Error 4. A/D Board Error 5. Analogue value over 1,040,000. ※ “-OVER-” displays as well if the current value is over the absolute value of Max Capacity. Ex) Max Capacity is “100” and current weight is uner “-100” : “-OVER-” shows up.	1. Check load cell input digital value on Test mode 1. If this value does not change, check load cell and connection condition first. 2. Check weight value error with another indicator. 3. Check A/D converting board error with another indicator. 4. Check Power cable 5. Check load cell terminal
“UnPAss”	1. Power has been supplied when the scale part is not empty. ※ F101-00 : “UnPAss” displays when power has been supplied though there is load of 10% of Max Capacity on the scale part. ※ F101-01 : Indicator saved previous zero value so it normally works with the load on the scale part not showing “UnPAss”.	1. Make sure that the weighing part is empty before turn on the power. 2. Set F101-01(Back-up) so that the indicator can remember first empty value.
“HAIt”	“HAIt” on the display or continuous beep – Hard ware error	Please contact the distributor or the Head Office.

Warranty Certification		
<p>This product passed strict quality test of SEWHACNM Co., LTD.</p> <p>If there is a defect of manufacturing or abnormal detection within warranty period, please contact our agent or distributor with this Warranty Certification so that you can get the product repaired or replaced.</p>		
Warranty Clause		
<p>1. The warranty period is one(1) year from your purchase date.</p> <p>2. Warranty Exemption Clause</p> <ul style="list-style-type: none"> - Warranty period expired - Mal-function caused by repairmen, modification, etc without any authorization of the Headquarter. - Mal-function caused by user's carelessness - Mal-function caused by distribution of non-authorized distributor or agent - Mal-function caused since user did not follow the precautions. - Mal-function or defection caused by Fore Majeur - Without presentation of this Warranty Certification <p>3. Other</p> <ul style="list-style-type: none"> - Warranty Certification without authorized stamp is invalid. 		
Main office: SEWHACNM Co.,Ltd. #504, 302dong, 397, Seokcheon-ro, Ojeong-gu, Bucheon-si, Gyeonggi-do, Korea Tel : +82 32-624-0060 Fax : +82 32-624-0065 E-mail : sales@sewhacnm.co.kr Homepage : http://www.sewhacnm.co.kr Made in KOREA	Product	Digital Weighing Indicator
	Model	SI400
	Serial No.	
	AUTHORIZED STAMP	