CE

Approved for Digital Weigh Indicator

Digital Weighing Indicator
SI 300

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.

Copy Rights

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 : http://www.sewhacnm.co.kr

Email : sales@sewhacnm.co.kr

2. INTRODUCTION

Introduction

Thank you for your choice of this SI300 Industrial Digital Weighing Indicator.

This SI300 model is high-performance weighing Indicator.

Please review and learn this instruction Manual and enjoy your process efficiency

with "SI 300" Weighing Indicator.

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.

Features

1. SI 300 model is the standard 1/8 DIN SIZE and compact enough, so it is easy to install.
2. It has wide range of DC Input.
3. Front panel is covered with Polycarbonate film, strong against dust and water.
4. RS-422/485 serial port standard installed,

3. SPECIFICATION

3-1 Specification

Content			Specification
Performance	External Resolution		1/20,000
	Internal Resolution		1/2,097,152 (±1,048,576)
	Input Sensitivity		0.1μV/V
	Max. Signal Input Voltage		3.0 mV/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
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		7segment 6 digit, 1 inch Red Color FND
	Key Pad		6EA Key including CAL key
Comm	Serial Interface		Data Transference Command Mode Serial Printer Mode
Power	AC100V ~ AC 240V (50/60Hz)		
Size	190mm(W) x 124mm(H) x 122mm(D)		Weight : 2.0kg

3-2. Front Panel

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

3-2-2. State Lamp

Display	Meaning
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.
TxD	When the Indicator transmits Serial communication data (Print data), Lamp is ON.
RxD	When the Indicator receives Serial communication data, Lamp is ON.
F	When the "F" key is working, Lamp is ON.

3-2-3. Key Operation

ZERO	1. Normal Mode : Make Weight value as Zero. (F07, F08 setting) 2. Calibration Mode : Cancel the value or move to previous step.
TARE	1.Normal Mode : Set the TARE Function .(F09 setting) 1 time input : "TARE", 2 times 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 4.Test Mode 1 : Analog value check mode
HOLD	1. To set the "HOLD" Function (refer F10) [1st input : "HOLD", 2nd input : "HOLD Reset"] 2.Calibration Mode : Move to right 3.F-Function setting : Move to right 3. Under "SETUP" Mode, Enter into the "Calibration" Mode. 4.Test Mode 1 : Analog Variation value check mode
PRINT	1. Normal Mode : Print out (refer F38, F32) 2.Calibration Mode :Increase set value 3.F-Function setting : Increase set value 4. Set up Mode : Enter Test Mode. ※ If the printer is installed, under "F01-01 setting, when you press this key the current valued is increased. And the current weight is saved and print out, altogether. (Refer to CH.5-4)
F	1. Press this key 4times, within 2secs, enter "SET-UP" mode. 2.F-Function setting : Save the value go to next step

●Setup Mode :It is a mode can SET UP the calibration, Function of SI300. (refer to CH5. SET UP)

3-2-4. Hot key (with F key)

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

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. Connector

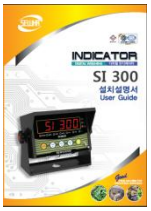
LOAD CELL				
EX+	EX-	SIG+	SIG-	SH

RS-232C		
RxD	TxD	GND

CURRENT LOOP	
C/L	C/L

OFF
ON

3-4. Composition

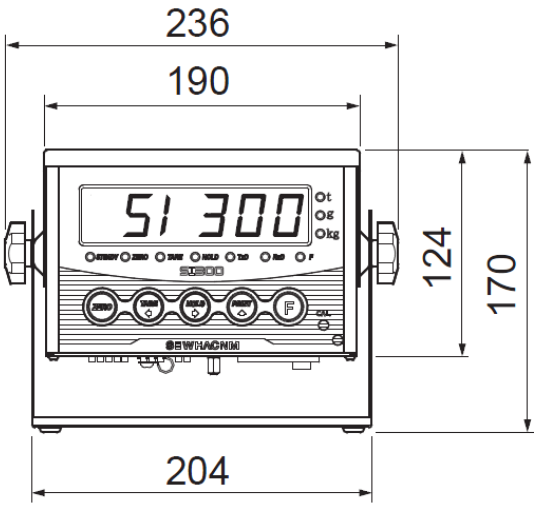
SI 300	AC Power Cable	Side Bolt	Terminal Pin	Manual
				

4. INSTALLATION

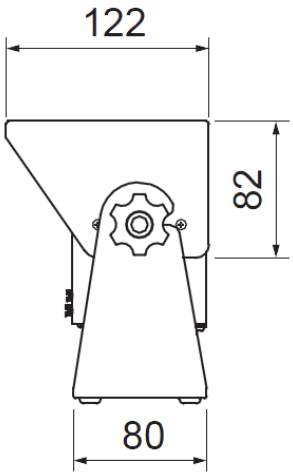
4-1. External Dimension & Cutting Size

External Dimension (unit: mm)

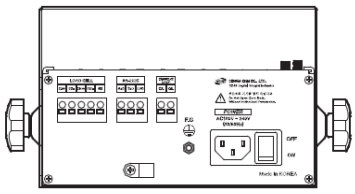
Front View



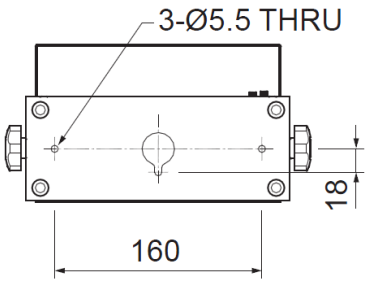
Right View



Bottom View



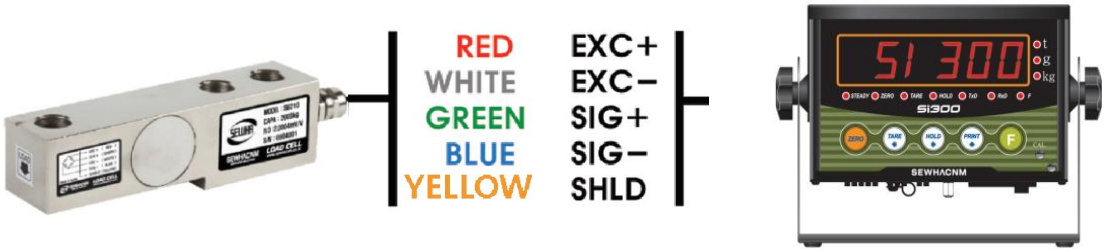
Mount Hole



4-2 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.

Load Cell Installation

1. You can connect Max. 8pcs of same capacity Load cells at once. (350 Ω)
2. You have to make horizontal balance on the ground.
3. If you install more than 2pcs of load cells, use Summing box and adjust output signa 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.
7. Under set up the Load cell, if EXC+ and EXC- have a short circuit, It may cause damage in the indicator.(specially analogue board)
8. If you connect other wires to Load cell terminal wrongly, it may cause damage in the analogue board.
9. Before connecting the load cell cable you have to power off and be sure to connect the cable to the terminal correctly.
10. Do not weld near the load cells , Indicators or other devices.

5. SET-UP

5-1. Adjusting "ZERO" Balance (Calibration)

Adjust weight balance between "Real weight" on the load cell(Weight Part) and "Displayed weight of Indicator". When you replace LOAD CELL or Indicator, you have to Calibrate process once again.

(When you start calibration mode, TARE, HOLD & PRINT function is 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/NEXT

- **To Go Each Mode**

Calibration	Weight Calibration	CAL key→ 
	Simulation Calibration	CAL key →  → 
F-FUNCTION Mode		 key 4 times → 
Test Mode	Analog Value	 key 4 times →  → 
	Serial interface	 key 4 times →  → 
	Key test	 key 4 times →  →   :1,  :2,  :3,  :4,  :ESC

- Entering  means ESC/UPPER step, Entering  means SAVE/NEXT Step.
- Default is no password. Displaying "P-W" means the password is activated. Please input your pass word.

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

5-2-1. Starting Test Weight Calibration Mode

When **"CALIBR"** is displayed, press TARE key. Then Test Weight Calibration Mode will be started.

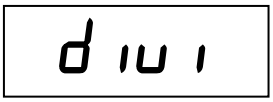
5-2-2. Max using capacity

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

Ex) When max capacity : 20kg, Minimum division : 0.001kg

Input '20' and press F key to save and go to the next step.

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



After "DIVI" is displayed

Select Decimal point & division with HOLD & PRINT key.

Ex) When Max capacity : 20kg, Min division : 0.001kg.

Input '0.001' and press F key to save and move to next step.

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 be less than **1/20,000**.
If the division is so small compare with max capacity,
Error message **" Err 01 "** will be displayed and move back to **"CAPA"** step again.

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

dEAd	When "DEAD" is displayed, press F key, then indicator will calculate Dead weight of scale part automatically.
CAL-0	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.

In this step, if there is some force or vibration on weighing scale, and unstable condition will be continued, **"ErrorA"** will be display, and "DEAD value" will not be calculated.
Please remove all the force or vibration and process it again.

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

SPAN	If "SPAN" is displayed, input "Test Weight" capacity and press F key.
5.000	For example, when the weight of test weight is 5kg, input 5.000
UP	When "UP" is displayed, load your test weight on the scale (weigh bridge) and press F key.
CAL-0	Calculate Span value during 10 ~20 secs, 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.

0.62923	After calculation, span value will be displayed on the display. Then press F key. ※This span value is not a weight value.
End	When " END" is displayed and calibration is completed.

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

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

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

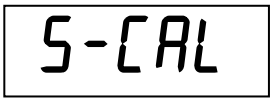
The guaranteed resolution of this "Simulation Calibration" is 1/3,000.

5-3-1. Simulation Calibration Mode Start

After remover CAL bolt, press the CAL lock button.

When **"CALIBR"** displays, press HOLD key,

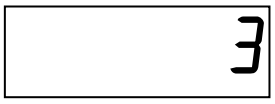
Then Test Weight Calibration Mode starts.



After displaying "S-CAL", press F key and input the Max using capacity with direction keys.

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.)



Ex) In case of Rated capacity : 3t, Min division : 0.001t(1kg), input 3.

And press F key to save and go to the next step.

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) There are 4pcs of load cells, and each load cell's Max capa is1,000kg.

Then, total Max Capacitywill be 4,000kg(1,000 x 4) and you have to input 4,000.

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

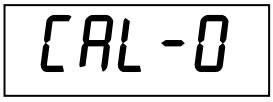
After "DIVI" is displayed select Decimal point with HOLD key.

Select Decimal point & division with HOLD & PRINT key.

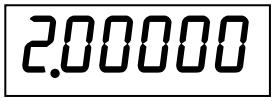
Ex) In case of Max using capacity : 3tf, Min division : 0.001t(1kg).

Input 0.001 . 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. Then the indicator starts to measure and find optimal "Dead weight value of Scale" automatically..
	It takes 10sec or 20sec to get the best situation.

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

	After "mV" is displayed, Check the Rated output value of Load cell. (Refer to the load cell label, or Test Report) .
	Ex) Load cell rated output 2.0mV/V
	If input wrong value, there will display "BAD", please go back to *Setting "Capacity of Load Cell".* After recheck the label of load cell and retry the process.
	After finishing calculation, calculated "Span value", "DONE" will be displayed.
	Now, the Simulation Calibration is done,
	Press F key to complete the calibration process.

In case of multiple pieces of load cells are connected, the rated output will be same as single load cell's. (Because plural load cells are connected with parallel connection, the sum of rated output voltage is same as single load cell's rated output)
※Due to some variation between **"State output rate"** and **"Real Output rate"** of load cell, there might be some weight difference after finishing calibration.
If you want to make more precise weighing process, please measure real output rate of load cell and input the measured value.
This Simulation 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.***

5-4. F-FUNCTION Setting

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

5-4-1. Start "SET UP" Mode (Pass Word Not use)

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

5-4-2. Start "SET UP" Mode (Pass Word Use – Refer F-function 95)

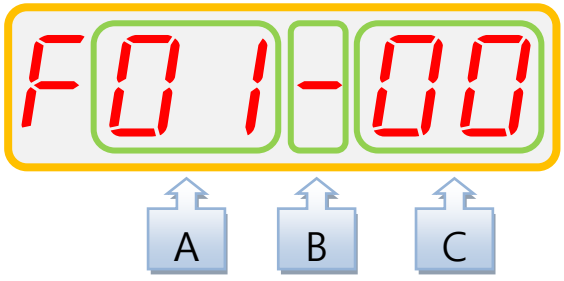
P-UJ	Press F key four times within 2sec If "P-W" displays, input 4 characters password.
SEtUP	If Password is right, "SETUP" Mode starts.
Err	If Password is wrong, it is back to weighing display.

No password at factory default.

If you set password by "F95". "TEST" mode, you cannot start "SETUP" Mode without password. Please don't forget the pass word.
After starting "Calibration" mode, and "Test" mode, serial I/F will be closed.

■ Starting F-FUNCTION Mode

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



"A" : Make the function number and press F key.

"B" : Whenever press PRINT key the the function number will increase.

"C" : Make the set value and press F key and save.

■ F-Function List

General Function Setting ("●" Factory default set value)

Weighing Data Save Method selection			
F01	●	0	Non-Save Mode (Weight Data & weighing counter)
		1	Save Mode (Weight Data & weighing counter)
Weight –Back up selection			
F02		0	Normal Mode
	●	1	Weight Back up Mode
Motion Band Range setting			
F03	05	01 ∫ 99	This is set "Steady" acceptable range of weighing part. If there is vibration on weighing part, you can set this function and reduce the vibration effect on weighing process. 1 : Weak vibration ~~ 99 : Strong Vibration
Zero Tracking Compensation Range setting			
F04	05	00 ∫ 99	Due to external causes (Temperature, wind, and dust), there will be small weight difference, the Indicator will ignore the weight difference and display as Zero.
Auto Zero Range setting			
F05	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. (Auto Zero Range : ± Set value + weight unit)
Digital Filter setting			
F06	04	00~40	0 (Weak vibration) ~ 40 (Strong Vibration)
Zero key Operation mode selection			
F07		0	Activate only under "Steady" condition
	●	1	Always activate
Zero key Operation Range selection : (-) value is same to (+)			
F08		0	Activated within 2% of Max. Capacity
		1	Activated within 5% of Max. Capacity
	●	2	Activated within 10% of Max. Capacity
		3	Activated within 20% of Max. Capacity
		4	Activated within 50% of Max. Capacity
		5	Activated within 100% of Max. Capacity
		6	There is no limit of Zero key operation range.
※ 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.			

Tare key Operation Range selection : (-) value is same to (+)			
F09		0	Activated within 10% of Max. Capacity
		1	Activated within 20% of Max. Capacity
	●	2	Activated within 50% of Max. Capacity
		3	Activated within 100% of Max. Capacity
"Hold" Mode selection			
F10	●	0	Peak Hold : Measure Max. weight value and hold on display.
		1	Sample Hold : Hold current weight until "Hold Reset"
		2	Average Hold : Hold average value (Refer F-F50)
"STEADY" condition check time setting			
F11	03	00 ∫ 09	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. (0.5sec per set value)
Display Up-Date speed setting			
F12	●	1	60/sec
		2	30/sec
		3	20/sec
		4	15/sec
		5	10/sec
		6	6/sec
		7	3/sec
		8	2/sec
		9	1/sec
Weight Display selection under "Unpass / OverLoad"condition			
F13		0	Not Display Weight (just "UNPASS" or "–OL-" is displayed)
	●	1	Display Weight (with a flash)
Equipment No. setting – ID No.setting			
F18	01	01~99	ID No. setting with No. key. (01~99 settable)

■ Communication Mode Setting

Parity Bit selection Mode					
F30	●	0	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Non)
		1	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Odd)
		2	DATA Bit (8 Bit)	STOP Bit (1 Bit)	Parity Bit (Even)
		3	DATA Bit (8 Bit)	STOP Bit (2 Bit)	Parity Bit (Non)
		4	DATA Bit (8 Bit)	STOP Bit (2 Bit)	Parity Bit (Odd)

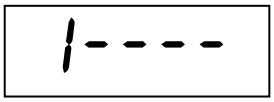
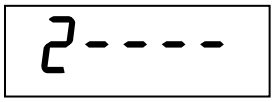
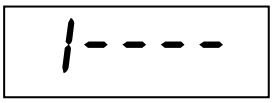
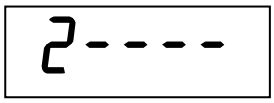
		5	DATA Bit (8 Bit)	STOP Bit (2 Bit)	Parity Bit (Even)
		6	DATA Bit (7 Bit)	STOP Bit (1 Bit)	Parity Bit (Odd)
		7	DATA Bit (7 Bit)	STOP Bit (1 Bit)	Parity Bit (Even)
		8	DATA Bit (7 Bit)	STOP Bit (2 Bit)	Parity Bit (Odd)
		9	DATA Bit (7 Bit)	STOP Bit (2 Bit)	Parity Bit (Even)
Serial Communication Speed selection					
F31		0	2,400bps		
		1	4,800bps		
	●	2	9,600bps		
		3	14,400bps		
		4	19,200bps		
		5	28,800bps		
		6	38,400bps		
		7	57,600bps		
		8	76,800bps		
		9	115,200bps		
DATA Transference Method selection					
F32		0	Simplex Mode / Stream Mode		
	●	1	Duplex Mode / Command Mode		
		2	Print Mode		
"Check-Sum" detection selection (Under F32-01 setting, only)					
F34	●	0	Check-Sum Not Use		
		1	Check-Sum Use		
Under Stream Mode select the way transmit data protocol/frame (basic port)					
F35	●	0	Transmit by Protocol		
		1	Transmit by frame (in case of using specific utility)		
Caution : In case of "Transmit by frame" & under 14,400bps setting(F31), the speed of system will be slow.					
DATA Transference Mode selection (Under F32-00 setting, only)					
F36	●	0	Always		
		1	Single time data transference, Whenever the weight is steady over Empty range.		
		2	Single time data transference, at first steady point, over Empty range.		
		3	Data transference, Whenever "Print" key input		
DATA Transference Format selection (Under F32-00 setting, only)					
F37	●	0	Format 1 (recommended when use external display)		

		1	Format 2. (Format 1 + ID No.)
		2	Format 3. (recommended when connecting to PLC or PC)
		3	CAS Format
Print Mode selection (Under F32-02 setting, only)			
F38	●	0	Manual Print : Whenever "Print" key input.
		1	Auto print (at the first Steady point over "EMPTY" range or Whenever "Print" key input.)
		2	Auto print (Whenever Steady status at over "EMPTY" range or Whenever "Print" key input.)

■ Print Mode Setting

Weight Unit selection			
F41	●	0	Kg
		1	g
		2	t
Print Format selection			
F42	●	0	**Continuous Print -** Serial No. and Weight will be printed continuously.
		1	**Single Print -** Date, Time, S/N, ID No. Weighing Data will be print
SUB/GRAND Total Data Delete selection			
F44	●	0	Not deleted (= manual Delete mode)
		1	Automatically Deleted.-After print out SBU/GRAND Total.
Paper Withdraw Rate setting (After SUB/GRAND Total Print)			
F45	03	00~09	Whenever set value increased as 1, then 1 line will be added.
Paper Withdraw Rate setting (After Continuous/Single Print)			
F46	03	00~09	Whenever set value increased as 1, then will be added.
Printing Language Selection			
F47	●	0	KOREAN
		1	ENGLISH
Minus(-) symbol Print selection			
F49	●	0	Print minus(-) symbol, if the weight is minus(-).
		1	Ignore minus(-) symbol
Set time of "Average Hold"			
F50	03	00~9	When setting "Average Hold", set the time. (unit : sec) ※Automatic Hold Rest , After set time.

■ Other Setting Mode

<table>
<tr><td colspan="3">EMPTY Range setting</td></tr>
<tr><td>F80</td><td>10</td><td>You can set “EMPTY” Range.
Ex) “0” setting : When Net Zero, “Zero” status lamp is ON.
“200” setting : Under “200”, “Zero” Status lamp is ON.</td></tr>
<tr><td colspan="3">TIME(H,M,S) Check / Change (every 24Hours)</td></tr>
<tr><td>F90</td><td colspan="2">Check Current DATE data or you can Change to new date</td></tr>
<tr><td colspan="3">TIME Check / Change</td></tr>
<tr><td>F91</td><td colspan="2">Check Current TIME data or you can Change to new time</td></tr>
<tr><td colspan="3">SETUP Mode Password Key Setting / Change</td></tr>
<tr><td>F95</td><td colspan="2">Setting the password
 
1) When “1” shows input the password with 4 characters.
 
2) When “2” displays input the same password again.
Change the password
 
1) If “P-W” displays input current password
 
2)If “1” displays input the new password .
 
3)If “2” displays input the new password again.
Deactivate Lock setting
If you set the password including F key , it is unlocked.
When setting password you cannot start “SETUP” mode without password, do not forget your password.</td></tr>
<tr><td colspan="3">Program & Hard ware Version Check</td></tr>
<tr><td>F98</td><td colspan="2">Check the Program & Hard ware version
Ex) “100 1.04” means H/W : ver.1.00 & S/W : ver.1.04</td></tr>
</table>

5-5. Test Mode

Before starting the TEST mode, please remove operating devices.

Press F key 4 times then "SETUP"displays

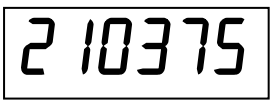
input PRINT key to stard TEST mode.

TEST MODE 1			
ZERO	TARE	HOLD	PRINT
ESC / BACK	Analog value Check Mode	Serial port test mode	Key/Digital Input Check Mode

5-5-1. Analog Check Mode

Under this mode, you can check analogue value to real digital value through Display. The last digital value can be fluctuated

F key 4 times → PRINT key → TARE key



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. (-1048575~1048575)

HOLD : Displaying 1~100,000 HOLD : Displaying 10~1,000,000 HOLD : Displaying 100~10,000,000

5-5-2. Key / Digital input Test Mode

Under this mode, you can test Key input and Digital Key input test

F key 4 times → PRINT key → PRINT key

ZERO	TARE	HOLD	PRINT	F
ESC	1	2	3	4

5-5-3. Serial Interface Test Mode.

This is the mode to check RS232C port.

F key 4 times → PRINT key → HOLD key

RS-232C RxD TxD GND	Short between Rxd & Txd of Indicator terminal.
COrn1	Enter the RS232C test mode and "COM1" is displaying, then press F key
PASS	Displaying "PASS" is that the port works well.
UNPASS	Displaying "UNPASS" means that the port 's IC chip has a problem. Contact your seller or the main office..

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

6. INTERFACE

6-1. Serial Interface

6-1-1. Serial Interface (RS-232C)

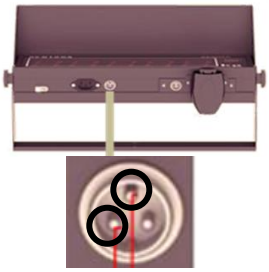
SI300 Terimal

RxD ---------- 3
TxD ---------- 2
GND ---------- 5

PC : 9 PIN

6-1-2. Current Loop

SI300 Terminal



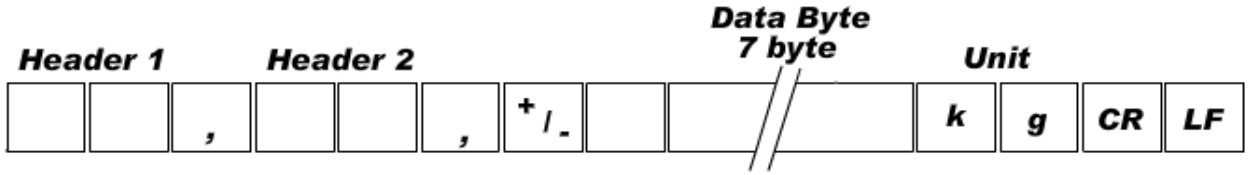
Display SE 6135A

Terminal

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.

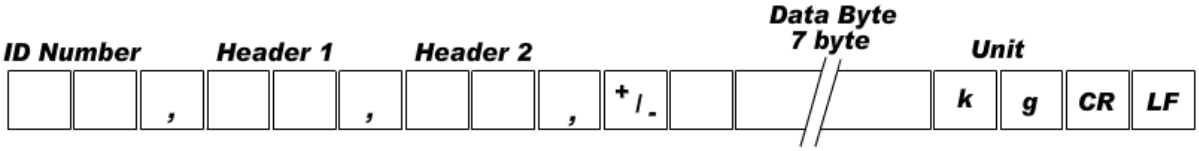
6-1-4. Data Format

1. Data Format1 : ID Number is not be transferred.(Refer "FUNCTION 37/F67-00" setting)



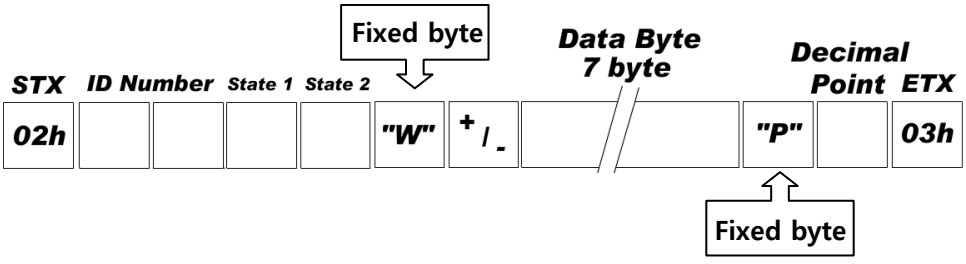
Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : STEADY	GS : when setting TARE
US : UNSTEADY	

2. Data Format2 : ID Number + Data Transference (Refer F-function 37-01, F18)



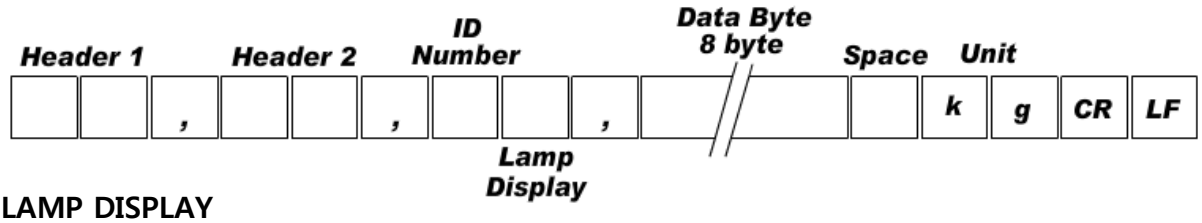
Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : STEADY	GS : when setting TARE
US : UNSTEADY	

3. Data Format3 : ID Number + State (F37-03 setting)



Header1	Header2
O : OVER	G : Gross weight
S : STEADY	N : Net weight
U : UNSTABLE	

4. CAS Format (22byte)



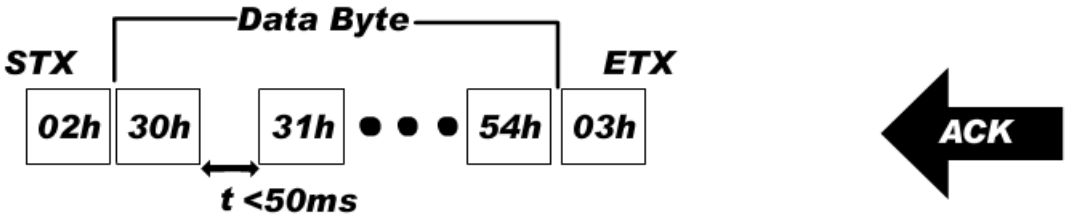
LAMP DISPLAY

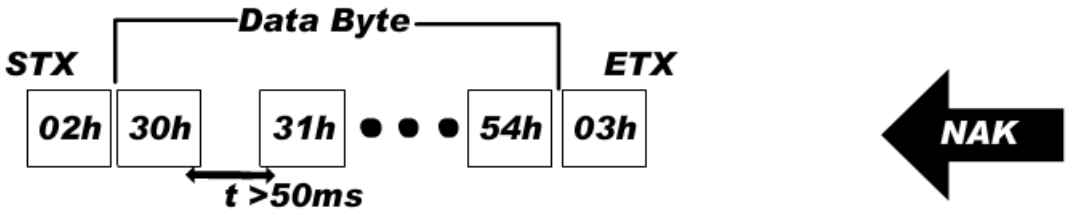
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	0	1	1	1	1	1	1
1	STEADY	1	Hold	Print	Gross Weight	TARE	ZERO

Header1	Header2
OL : OVER LOAD	NT : GROSS weight
ST : STEADY	GS : Net weight
US : UNSTEADY	

6-1-5. Command Mode (F32-01 setting)

Under "Command Mode", Indicator will recognize the receipt of Order based on 02h(Header) and 03h(END) signal, and transfers ACK/ NAK).





※Although wrong value is transmitted, the communication format is matched, then ACK is transmitted.

Read Command

1.Current Weight data	
ASCII : STX ID(2Byte) RCWT ETX	**HEX :** 02 30 31 52 43 57 54 03
SI 300 response	STX ID RCWT **State1(1byte) State2(1byte)** P **decimal point(1byte) +/-(1byte) Current weight(7byte) unit(2byte)** ETX
	State1 : O(Over load) , S(Steady), U(Unsteady) **State2 : N(Net weight), G(Gross weight), P+No. : decimal point number**

Ex) Steady(S), TARE not used(N), 0.000kg

State1, State2, Decimal point

STX	ID	R	C	W	T	S	N	P	3	+	0	0	0	0	0	0	0	k	g	ETX
02h	30h	31h	52h	43h	57h	54h	53h	4Eh	50h	33h	2Bh	30h	30h	30h	30h	30h	30h	30h	6Bh	67h	03h

2. Indicator memory data	
ASCII : STX ID(2Byte) RCWD ETX	**HEX :** 02 30 31 52 43 57 44 03
SI 300 response	STX ID RCWD P decimal point**(1byte)DATE(6byte) TIME(6byte) the no. of weighing (6byte) +/- TARE(7Byte) +/- current weight(7byte) unit(2byte)** ETX

Ex) DATE : Aug 12th,2009, TIME : 12:00:00, the no. of weighing : 10, TARE : 2.000kg, current weight : 3.000kg

decimal point

STX	ID	R	C	W	D	P	3	0	9	0	8	1	2	1	2	0	0	0	0
02h	30h	31h	52h	43h	57h	44h	50h	33h	30h	39h	30h	38h	31h	32h	31h	31h	30h	30h	30h	30h

0	0	0	0	1	0	+	0	0	0	2	0	0	0	+	0	0	0	3	0	0	0	ETX
30h	30h	30h	30h	31h	30h	2Bh	30h	30h	30h	32h	30h	30h	30h	2Bh	32h	30h	30h	33h	30h	30h	30h	03h

3. Grand Total data	
ASCII : STX ID(2Byte) RGRD ETX	**HEX :** 02 30 31 52 43 57 44 03
SI 300 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

decimal point

STX	ID	R	G	R	D	P	3	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	ETX
02h	30h	31h	52h	47h	52h	44h	50h	33h	30h	30h	30h	30h	31h	30h	30h	30h	30h	30h	31h	30h	30h	30h	30h	03h

4.Finished Weight data	
ASCII : STX ID(2Byte) RFIN ETX	**HEX:** 02 30 31 52 46 49 4E 03
SI 300 response	STX ID RFIN P **decimal point(1byte) +/- Finished weight(7byte)** ETX

Ex) Finished weight : 2.000kg decimal point

STX	ID		R	F	I	N	P	3	+	0	0	0	2	0	0	0	ETX
02h	30h	31h	52h	46h	49h	4Eh	50h	33h	2Bh	30h	30h	30h	32h	30h	30h	30h	03h

5. Current time Data	
ASCII : STX ID(2Byte) RTIM ETX	**HEX:** 02 30 31 52 54 49 4D 03
SI 300 response	STX ID RTIM Current Time**(6byte)** ETX

Ex) Time : 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

6. Current date Data	
ASCII : STX ID(2Byte) RDAT ETX	**HEX :** 02 30 31 52 44 41 54 03
SI 300 response	STX ID RDAT Current Date**(6byte)** ETX

Ex) Date : Aug 12th ,2009

STX	ID		R	D	A	T	0	9	0	8	1	2	ETX
02h	30h	31h	52h	41h	41h	54h	30h	39h	30h	38h	31h	32h	03h

7. Tare data	
ASCII : STX ID(2Byte) RTAR ETX	**HEX :** 02 30 31 52 54 41 52 03
SI 300 response	STX ID RTAR P **decimal point(1byte) +/-(1byte) TARE value(7byte)** ETX

Ex) TARE : 2.000kg decimal point

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

Recommended Interval of READ COMMAND is min.60ms, 70ms is recommended, under 9600bps setting.

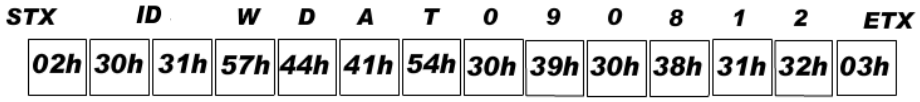
Min.60ms is required between each Read Command(under RCWD)

Min. interval is changed when data's length & speed are changed.

Min Interval : 20ms under 2400bps(RCWD)

Min Interval : 40ms under 115200bps (RCWD)

■Write Command

Zero (same as "ZERO" key)	
ASCII : STX ID(2Byte) WZER ETX	**HEX:** 02 30 31 57 5A 45 52 03
SI 300 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
SI 300 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
SI 300 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
SI 300 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
SI 300 response	normal: STX ID ACK ETX error: STX ID NAK ETX
PRINT **When transfer format, "F46 : plus line" and "F34 : checksums are not applied.**	
ASCII : STX ID(2Byte) WPRT ETX	**HEX:** 02 30 31 57 50 52 54 03
SI 300 response	normal: STX ID ACK ETX error: STX ID NAK ETX
PRINT grand total	
ASCII : STX ID(2Byte) WGPR ETX	**HEX:** 02 30 31 57 47 50 52 03
SI 300 response	normal: STX ID ACK ETX error: STX ID NAK ETX
Delete grand total	
ASCII : STX ID(2Byte) WGTC ETX	**HEX:** 02 30 31 57 47 54 43 03
SI 300 response	normal: STX ID ACK ETX error: STX ID NAK ETX
Date setting	
ASCII : STX ID(2Byte) WDAT current DATE (6byte) ETX	
Ex) Date : Aug 12th ,2009  	
SI 300 response	normal: STX ID ACK ETX error: STX ID NAK ETX

Time setting	
ASCII : STX ID(2Byte) WTIM Time (6byte)ETX	
Ex) Time : 12:00:00	
SI 300 response	normal: STX ID ACK ETX error: STX ID NAK ETX

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

Change S/N	
ASCII : STX ID(2Byte) WSNO S/N(6byte)ETX	
Ex) S/N is changed to 100	
SI 300 response	normal: STX ID ACK ETX error: STX ID NAK ETX

STX	ID		W	S	N	O	0	0	0	1	0	0	ETX
02h	30h	31h	57h	53h	4Eh	4Fh	30h	30h	30h	31h	30h	30h	03h

Recommended Comm. Interval of WRITE COMMAND is Min. 100ms.

Comm. Interval of WPRT is Min.300ms

You have to guarantee Min. 100ms interval between two different commands.

Response for WPRT will be output through Print Port, set by F32-0.

■ Command Mode Example

READ COMMAND

Ex.) Current Weight Command(RCWT), ID No. : 01, Current Weight : 7,000kg

1) P.C Read Command Format (STX ID NO. RCWT ETX) **"Check-sum" not used.**

PC transmits to SI300

STX	ID No.	R	C	W	T	ETX
02h	30h	31h	52h	43h	57h	54h	03h

SI300 Response to PC

STX	ID	R	C	W	T	S	N	P	3	+	0	0	0	7	0	0	0	ETX
02h	30h	31h	52h	57h	52h	53h	53h	4Eh	50h	33h	2Bh	30h	30h	30h	37h	30h	30h	30h	03h

2) When PC requests to Indicator, Format(STX ID RCWT ETX) CHCEK SUM is used.

PC transmits to SI300

STX	ID	R	C	W	T	Check Sum	ETX
02h	30h	31h	52h	43h	57h	54h	41h	36h	03h

SI300 Response to PC

STX	ID	R	C	W	T	S	N	P	3	+	0	0	0	7	0	0	Check Sum 0	5	A	ETX
02h	30h	31h	52h	57h	52h	53h	53h	4Eh	50h	33h	2Bh	30h	30h	30h	37h	30h	30h	30h	35h	41h	03h

WRITE COMMAND

Ex) SP1 Setting Command, ID No : 01, New SP1 Set value : 0.600kg

1) PC Write command format (STX ID WPR1 000.600 ETX) "**CHECK SUM" not use.**

PC transmits to SI300

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

SI300 Response to PC

STX	ID	ACK	ETX
02h	30h	31h	06h	03h

Normal operation

STX	ID	NAK	ETX
02h	30h	31h	15h	03h

Incorrect operation

1) PC Write command format (STX ID WPR1 000.600 ETX) **"CHECK SUM" use.**

PC transmits to SI300

STX	ID	W	T	I	M	1	2	0	0	0	0	C	A	ETX
02h	30h	31h	57h	54h	49h	4Dh	31h	32h	30h	30h	30h	30h	43h	41h	03h

SI300 Response to PC

			Check Sum			
STX	ID	ACK	6	C	ETX
02h	30h	31h	06h	36h	43h	03h

Normal operation

			Check Sum			
STX	ID	NAK	7	B	ETX
02h	30h	31h	15h	37h	42h	03h

Incorrect operation

All Read/Write command must be use "HEX CODE"..

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.

6-2 Serial Print (F32-02 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.

6-2-1. 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.

English Format (F47-01)

```
============================
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(F42-00)

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

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

Single Print Format(F42-01)

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

Grand Total Print

(Grand Total Print delete setting, F44-01)

※ Under "F01-01" setting, the current weight is saved and print out.

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	
"UN PASS" display	Load cell broken or Indicator connection Error	Load cell Check Load cell connection Check	
	Power was "ON" when some weight is on the load cell.	Remove weight on the Load cell	
"OL" or "UL" display(Over Load)	1) Load cell broken or Indicator connection Error 2) Loading over than Max. Capacity	1) Load cell Check 2) Load cell connection Check 3) Remove over loaded weight	

7-2. Calibration Process

Display	Cause	Treatment
Err01	When Max.capacity/digit value is over 20,000	Re-input the Max. Capacity, less than 20.00 (Max. Capacity / Digit)
Err04	Standard weight value is over than Max. Capacity	Re-input Standard weight value with Number keys, under Max. Capacity
Err05	Standard weight value is less than 10% of Max. Capacity	Re-input Standard weight value with Number keys, more than 10% of Max. Capacity
Err06	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)
Err07	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)
Err08	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-Er" 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 F02-01(Back-up) mode so that the indicator can remember first empty value.
"SEt"	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	

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

WARRANTEE CETIFICATION

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

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

Then, we will repair or replace free of charge.

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

3. Other

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

SEWHACNM Co.,Ltd.

#504-302, 397, Seokcheon-ro, Ojeong-gu,

Bucheon-si, Gyeonggi-do, Korea

Made in KOREA

Website : http://www.sewhacnm.co.kr ,

Email : sales@sewhacnm.co.kr

Product	Digital Weighing Indicator
Model	SI 300
Serial No.	
AUTHORIZED STAMP