CE

*Approved for Digital Weigh Indicator*

# Digital Weighing Indicator
# SI 300

## Instruction Manual


SEWHACNM
주식회사 세화씨엔엠

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# 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 SI300Industrial Digital Weighing Indicator.

This SI300model is high-performance weighing Indicator.

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

with "SI300" 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. SI300 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<br>Simulation Calibration Mode |
| | Display | | 7segment 6 digit, 1 inch<br>Red Color FND |
| | Key Pad | | 6EA Key including CAL key |
| **Comm** | Serial Interface | | Data Transference<br>Command Mode<br>Serial Printer Mode |
| **Power** | SI300 | | AC Free Voltage |
| | SI300B | | 10,000mA Battery(Micro USB Port) |
| **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

| | |
|---|---|
|  | 1. Normal Mode : Make Weight value as Zero. (F07, F08 setting)<br>2. Calibration Mode : Cancel the value or move to previous step. |
|  | 1.Normal Mode : Set the TARE Function .(F09 setting)<br>1 time input : "TARE", 2 times input : "TARE Reset"<br>(When "HOLD" or weight value is ZERO, then this key doesn't work.)<br>2.Calibration Mode : Move to left<br>3.F-Function setting : Move to left<br>4.Test Mode 1 : Analog value check mode |
|  | 1. To set the "HOLD" Function (refer F10) [1st input : "HOLD", 2nd input : "HOLD Reset" ]<br>2.Calibration Mode : Move to right<br>3.F-Function setting : Move to right<br>3. Under "SETUP" Mode, Enter into the "Calibration" Mode.<br>4.Test Mode 1 : Analog Variation value check mode |
|  | 1. Normal Mode : Print out (refer F38, F32)<br>2.Calibration Mode :Increase set value<br>3.F-Function setting : Increase set value<br>4. Set up Mode : Enter Test Mode.<br>※ 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) |
|  | 1. Press this key 4times, within 2secs, enter "SET-UP" mode.<br>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)

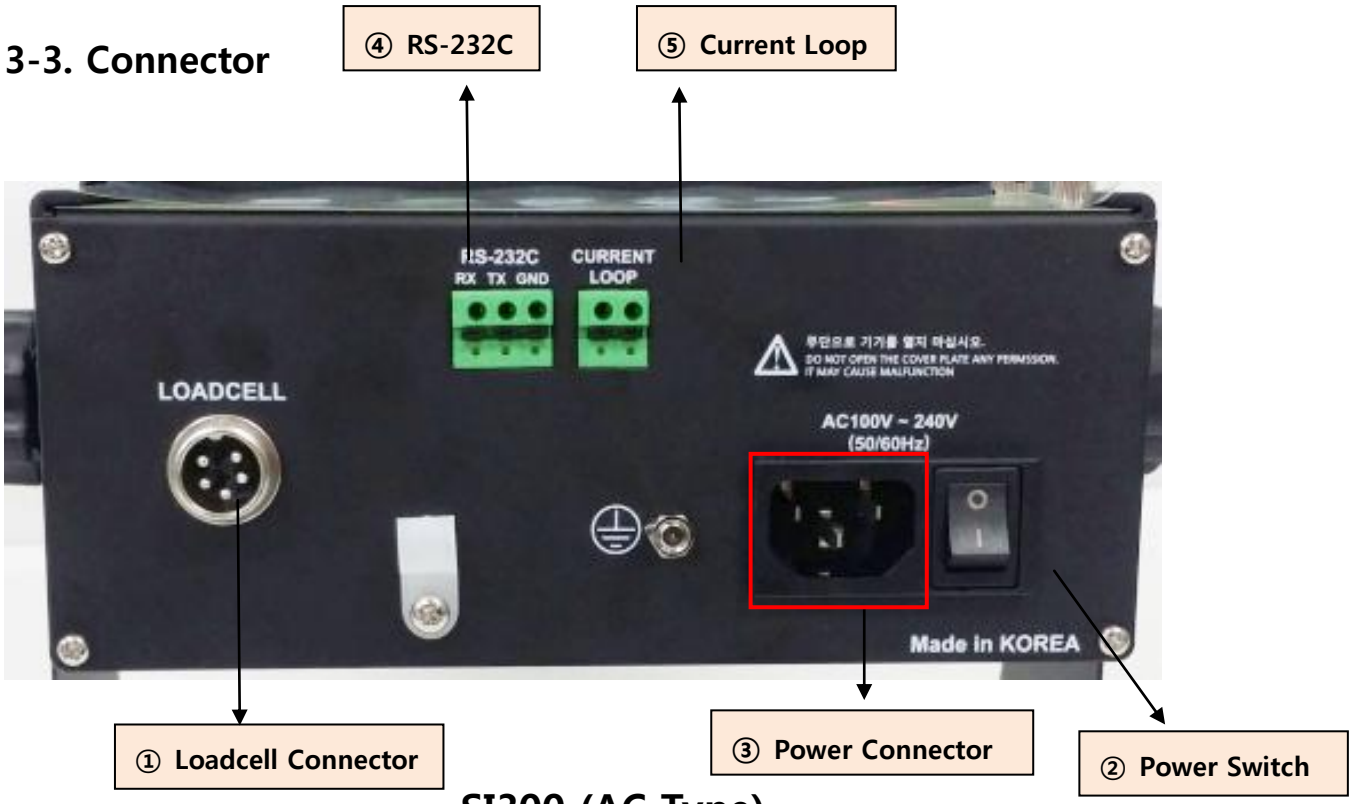
### 3-2-4. Hot key (with F key)

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

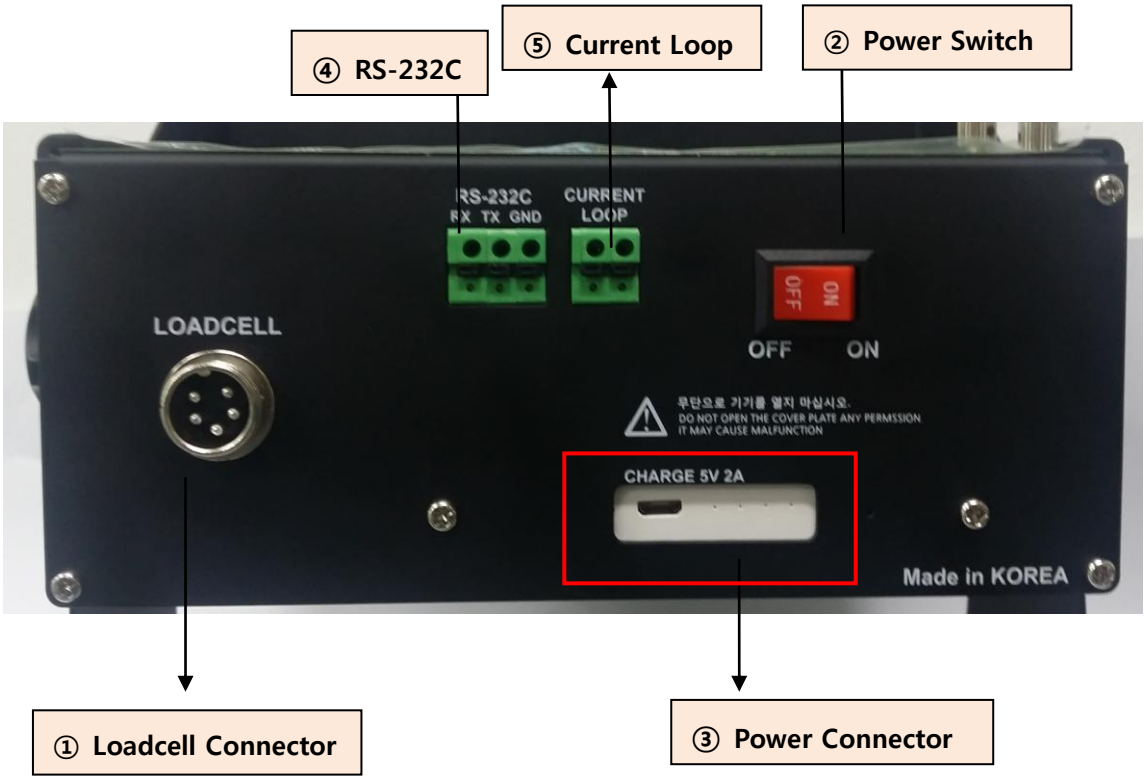
| | |
|---|---|
|  | Manual delete the grand total data |

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

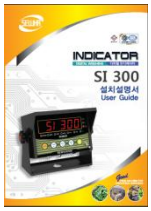



SI300 (AC Type)



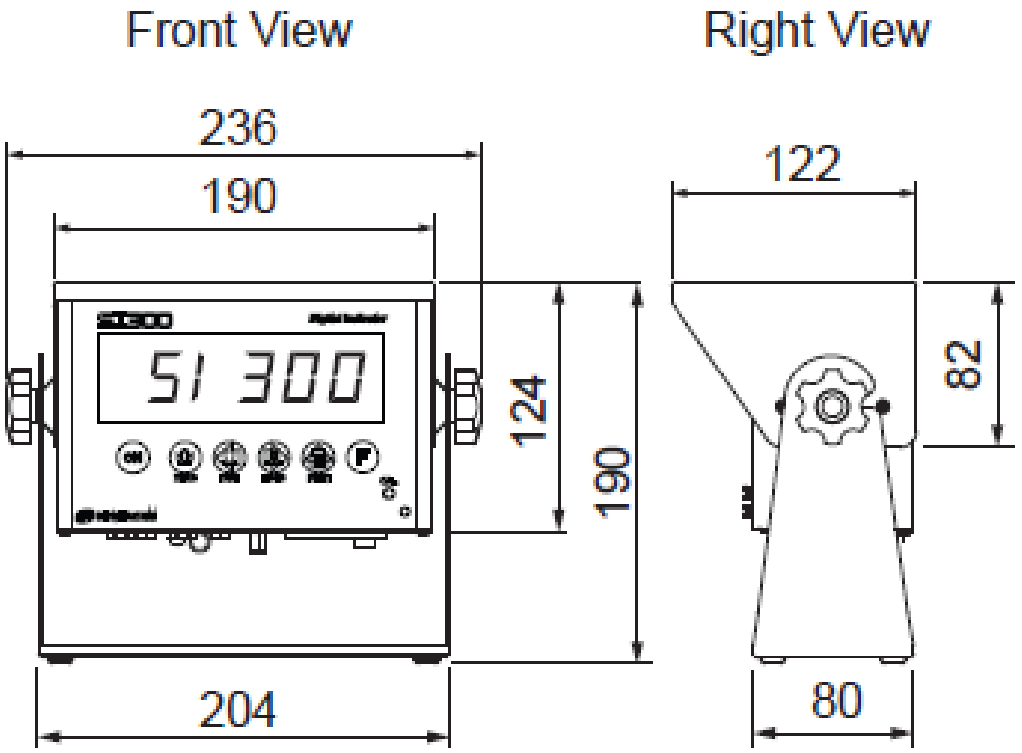

SI300B (Battery Type)

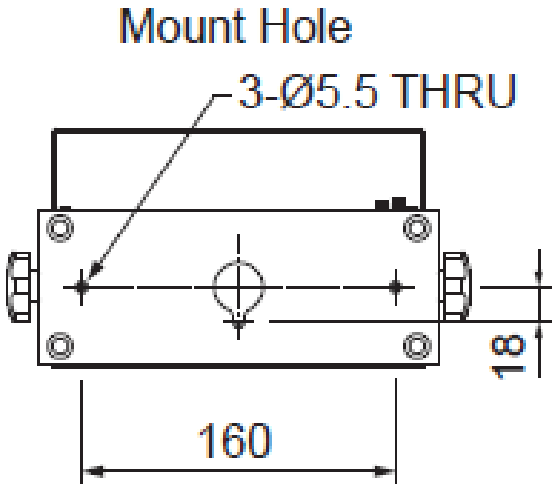
## 3-4. Composition

| SI300 | Adapter | Side Bolt | Terminal Pin | Manual |
|---|---|---|---|---|
|  |  |  |  |  |

# 4. INSTALLATION

## 4-1. External Dimension & Cutting Size



## 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→**   |
| **F-FUNCTION MODE** | |   **Key 4 times →**   |
| **Test Mode 1** | Analog Value |   **Key 4 times →**   **→**   |
| | Serial Interface |   **Key 4 times →**   **→**   |
| | Key test |   **Key 4 times →**   **→**     **:1**   **,:2,**   **:3,**   **:4,**   **:Back** |

- **ESC/UPPER step , Entering**   **, SAVE/NEXT Step, Entering**   **.**
- **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 

. Then Test Weight Calibration Mode will be started.

### 5-2-2. Max using capacity


**"**When "CAPA" is showed, input max capacity with keys & Press 

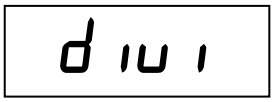
key to save the data & move to next step.


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

Input '20' and press 

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 

& 

key.

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

Input '0.001' and press 

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. F-FUNCTION Setting

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

### 5-3-1. Start "SET UP" Mode (Pass Word Not use)

| | |
|---|---|
| SEtUP | Press F key four times within 2sec<br>When "SET UP" is displayed, SETUP Mode is activated . |

### 5-3-2. Start "SET UP" Mode (Pass Word Use – Refer F-function 95)

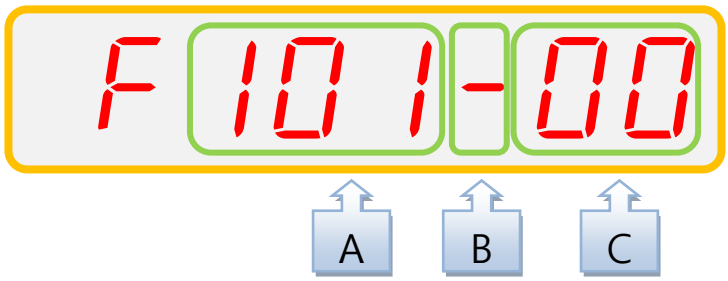
| | |
|---|---|
| P-UJ | Press F key four times within 2sec<br>If "P-W" displays, input 4 characters password.<br>If Password is right, "SETUP" Mode starts. |
| SEtUP | |
| Err | If Password is wrong, it is back to weighing display. |

**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

F Press 4 times → 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.

## 5-3-3. F-FUNCTION List(Summary)

| F-list | Subject | Contents |
|---|---|---|
| **101** | Equipment No. setting | 01~99 |
| **102** | Weight–Back up Mode | 00: Normal mode<br>01: Weight Back up Mode(Zero)<br>02: Weight Back up Mode(Zero&Tare) |
| **103** | Weighing Data Save Method | 00~06 |
| **105** | Auto Power OFF Setting | 00 : Disuse<br>01 : Use |
| **106** | Auto Power OFF Time Setting | 01~99 (Unit : 1 miniute) |
| **108** | Delay the key entering time | 1~50 (1:10ms) |
| **110** | Weight Unit | 00: kg,<br>01: g,<br>02: ton |
| **111** | Language for print bill | 00: Korean,<br>01: English |
| **201** | EMPTY Range | 00~999999 |
| **202** | Auto Zero Range | 01~99 (Unit: 0.25 gradation) |
| **203** | Steady Range | 01~99 (Unit: 0.25 gradation) |
| **204** | Steady condition check time | 01~99 (Unit: 0.1 sec) |
| **205** | Digital Filter | 01: Weak vibration ~ 99:Strong vibration |
| **206** | Zero key operation mode | 00: Always active<br>01: Active under steady condition only |
| **207** | Tare Key operation mode | 00: Always active<br>01: Active under steady condition only |
| **209** | Zero key Operation Range | 00: Active within 2% of Max Capacity<br>01: Active within 5% of Max Capacity<br>02: Active within 10% of Max Capacity<br>03: Active within 20% of Max Capacity<br>04: Active within 50% of Max Capacity<br>05: Active within 100% of Max Capacity<br>06: No limit |
| **210** | Tare key Operation Range | 00: Active within 10% of Max Capacity<br>01: Active within 20% of Max Capacity<br>02: Active within 50% of Max Capacity |

| | | |
|---|---|---|
| | | 03: Active within 100% of Max Capacity |
| **216** | Hold Mode | 00: Sample Hold<br>01: Peak Hold<br>02: Average Hold |
| **220** | Average Hold Time | 01 ~ 99 (Unit: 0.1 sec) |
| **221** | Minus (-) Mark Display | 00: Use<br>01: Disuse |
| **222** | Under UNPASS/OVERLOAD state,<br>Weight display | 00: Display<br>01: No display |
| **301** | Parity / Stop bit | 00: Data bit 8, Stop bit 1, Parity bit None<br>01: Data bit 8, Stop bit 1, Parity bit Odd<br>02: Data bit 8, Stop bit 1, Parity bit Even<br>03: Data bit 7, Stop bit 1, Parity bit Odd<br>04: Data bit 7, Stop bit 1, Parity bit Even |
| **302** | Serial Communication Speed | 00: 2,400bps<br>01: 4,800bps<br>02: 9,600bps<br>03: 14,400bps<br>04: 19,200bps<br>05: 28,800bps<br>06: 38,400bps<br>07: 57,600bps<br>08: 76,800bps<br>09: 1115,200bps |
| **303** | Data transmission mode | 00: Simplex / Stream Mode<br>01: Duplex / Command Mode<br>02: Print Mode<br>03: Modbus(RTU) |
| **304** | "Check-Sum" under command mode | 00: Disuse,<br>01: Use |
| **305** | Data Format under Stream Mode | 00: Format 1<br>01: Format 2<br>02: Format 3<br>03: Format 4 |
| **306** | Date transference under stream mode | 00: Continuously<br>01: Single time on every steady state<br>02: Single time(finish weighing process) |

| | | |
|---|---|---|
| | | 03: When input "PRINT" key |
| **352** | Print Format Setting | 00: Continuous Print,<br>01: Single Print |
| **354** | Print Output Delay Time Setting | 00~09 (Unit: 1 sec) |
| **355** | Paper Withdraw Rate setting<br>(After Continuous/Single Print) | 00~09 (Unit: 1 line add) |
| **356** | Paper Withdraw Rate setting<br>(After SUB/GRAND Total Print) | 00~09 (Unit: 1 line add) |
| **358** | Grand total data delete | 00: Disuse<br>01: Use |

## 5-3-4. F-FUNCTION List(Detail)

("●" Factory default)

| | | | |
|---|---|---|---|
| **Equipment No. setting** | | | |
| **101** | 01 | 01 ~ 99 | ID No. setting with No. key. (01~99 selectable) |
| **Weighing Data Save Method selection** | | | |
| **102** | | 00 | Normal mode |
| | | 01 | Weight Back up Mode(Zero) |
| | ● | 02 | Weight Back up Mode(Zero&Tare) |
| **Weighing Data Save Method** | | | |
| **103** | | 00 | Manual(Whenever "Print" key input) |
| | | 01 | Auto(At every steady states) |
| | | 02 | Auto(At the first steady states) |
| | ● | 03 | Auto(At weighing process finish) |
| | | 04 | Manual& Auto(At every steady states) |
| | | 05 | Manual& Auto (At the first steady states) |
| | | 06 | Manual& Auto(At weighing process finish) |
| **Auto Power OFF Setting** | | | |
| **105** | ● | 00 | Disuse |
| | | 01 | Use (After auto power off time #106 will off) |
| **Auto Power OFF Time Setting** | | | |
| **106** | 01 | 01~99 | 01~99 (Unit : 1 minute) |
| **Delay the key entering time** | | | |
| **108** | 10 | 0~50 | 1~10msec |
| **Weight Unit** | | | |
| **110** | ● | 00 | kg |
| | | 01 | g |
| | | 02 | ton |
| **Language for print bill** | | | |
| **111** | ● | 00 | KOREAN |
| | | 01 | ENGLISH |
| **EMPTY Range** | | | |
| **201** | 100 | 0 ~ 999999 | You can set "EMPTY" Range. |

| | | | |
|---|---|---|---|
| **Auto Zero Range** | | | |
| **202** | 00 | 00 ~ 99 | Within the "Auto Zero" range, weighing part is steady, indicator will display current weight as "Zero" If the weighing part is not "Steady", indicator will display current weight. (Unit:0.25 gradation) |
| **Steady Range** | | | |
| **203** | 08 | 01 ~ 99 | During the set time period, estimate weighing part's "STEADY" condition and display. (Unit: 0.25 gradation) |
| **"STEADY" condition check time** | | | |
| **204** | 10 | 01 ~ 99 | During the set time period, estimate weighing part's "STEADY" condition and display. If you set small value, indicator will take "STEADY" fast, if you set value, indicator will take "STEADY" slow. (Unit: 0.1 sec) |
| **Digital Filter** | | | |
| **205** | 20 | 01 ~ 99 | 01:Weak vibration ~ 99:Strong vibration |
| **Zero key operation** | | | |
| **206** | ● | 00 | Always active |
| | | 01 | Active under steady condition only |
| **Tare Key operation** | | | |
| **207** | ● | 00 | Always active |
| | | 01 | Active under steady condition only |
| **Zero key Operation Range** | | | |
| **209** | | 00 | Active within 2% of Max Capacity |
| | | 01 | Active within 5% of Max Capacity |
| | ● | 02 | Active within 10% of Max Capacity |
| | | 03 | Active within 20% of Max Capacity |
| | | 04 | Active within 50% of Max Capacity |
| | | 05 | Active within 100% of Max Capacity |
| | | 06 | No limit . |

※ **CAUTION: If setting over than 10%, The display weight could be over than Load cell input signal or Max Capacity and it may display "CELL-Err" or incorrect weight value. And It can be the cause of load cell damage.**

| Tare key Operation Range | | | |
|---|---|---|---|
| 210 | | 00 | Active within 10% of Max Capacity |
| | | 01 | Active within 20% of Max Capacity |
| | ● | 02 | Active within 50% of Max Capacity |
| | | 03 | Active within 100% of Max Capacity |

| Hold mode | | | |
|---|---|---|---|
| 216 | ● | 00 | Sample Hold: Hold current weight until "Hold Reset" |
| | | 01 | Peak Hold: Measure Max weight value and hold on display. |
| | | 02 | Average Hold: Hold average value |

| Average Hold Time | | | |
|---|---|---|---|
| 220 | 10 | 01 ~ 99 | Unit: 0.1 sec |

| Minus (-) Mark Display | | | |
|---|---|---|---|
| 221 | ● | 00 | Display |
| | | 01 | No display |

| Under UNPASS/OVERLOAD state, Weight display | | | |
|---|---|---|---|
| 222 | ● | 00 | Display |
| | | 01 | No display |

| Parity / Stop bit | | | | | |
|---|---|---|---|---|---|
| 301 | ● | 00 | DATA Bit (8 Bit) | STOP Bit (1 Bit) | Parity Bit (Non) |
| | | 01 | DATA Bit (8 Bit) | STOP Bit (1 Bit) | Parity Bit (Odd) |
| | | 02 | DATA Bit (8 Bit) | STOP Bit (1 Bit) | Parity Bit (Even) |
| | | 03 | DATA Bit (7 Bit) | STOP Bit (1 Bit) | Parity Bit (Odd) |
| | | 04 | DATA Bit (7 Bit) | STOP Bit (1 Bit) | Parity Bit (Even) |

| Serial Communication Speed selection | | | |
|---|---|---|---|
| 302 | | 00 | 2,400bps |
| | | 01 | 4,800bps |
| | ● | 02 | 9,600bps |
| | | 03 | 14,400bps |
| | | 04 | 19,200bps |
| | | 05 | 28,800bps |
| | | 06 | 38,400bps |
| | | 07 | 57,600bps |
| | | 08 | 76,800bps |
| | | 09 | 115,200bps |

| DATA transference Method selection | | | |
|---|---|---|---|
| 303 | ● | 00 | Simplex Mode / Stream Mode |

| | | | |
|---|---|---|---|
| | | 01 | Duplex Mode / Command Mode |
| | | 02 | Print Mode |
| | | 03 | MODBUS(RTU) |
| **Command mode "Check Sum" detection selection (F303-01)** | | | |
| **304** | ● | 00 | Disuse |
| | | 01 | Use |
| **Stream mode DATA Transference Format selection (Refer chapter 6-1-4)** | | | |
| **305** | ● | 00 | Format 1 (19byte) |
| | | 01 | Format 2 (22byte) |
| | | 02 | Format 3 (17byte) |
| | | 03 | Format 4 (22byte) |
| **Stream mode Data transference** | | | |
| **306** | ● | 00 | Continuously |
| | | 01 | Single time on every steady state |
| | | 02 | At the first steady point |
| | | 03 | Single time(when finish weighing process) |
| | | 04 | When input "PRINT" key |
| **Print Format** | | | |
| **352** | ● | 00 | Continuous Print |
| | | 01 | Single Print |
| **Print Output Delay Time** | | | |
| **354** | 00 | 00 ~ 09 | Unit: 1 sec |
| **Paper Withdraw Rate setting(After Continuous/Single Print)** | | | |
| **355** | 00 | 00 ~ 09 | Unit: 1 line add |
| **Paper Withdraw Rate setting(After SUB/GRAND Total Print)** | | | |
| **356** | 00 | 00 ~ 09 | Unit: 1 line add |
| **Grand total data delete** | | | |
| **358** | ● | 00 | Disuse |
| | | 01 | Use |

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

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

## 5-4. Test Mode

**Before starting the TEST mode, please remove operating devices.**

SETUP TEST

Press F Key 4 times then SETUP display input PRINT key to stard TEST mode.

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

### 5-4-1. 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 **Press 4 times →** PRINT **Key →** TARE **Key**

| | |
|---|---|
| 2 10375 | 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) |

2 10375 12 1037 12 103

| | | |
|---|---|---|
| HOLD Displaying 1~100,000 | HOLD Displaying 10~1,000,000 | HOLD Displaying 100~10,000,000 |

### 5-4-2. 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 |

### 5-4-3. Serial Interface Test Mode.

**This is the mode to check RS232C port.**

**F Key 4 times → PRINT Key → HOLD Key**

| | |
|---|---|
| RS-232C<br>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.<br>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

## 6-1-1. RS – 232C

RS-232C

RxD TxD GND

RxD ---------- 3

TxD ---------- 2

GND ---------- 5

**PC : 9 PIN**

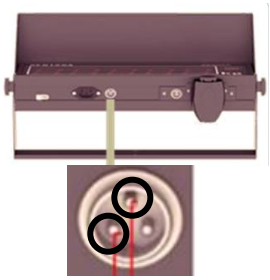
## 6-1-2. Current Loop

CURRENT LOOP

C/L C/L

**SI300 : Terminal**

극성 없음



**Display SE 6135A**

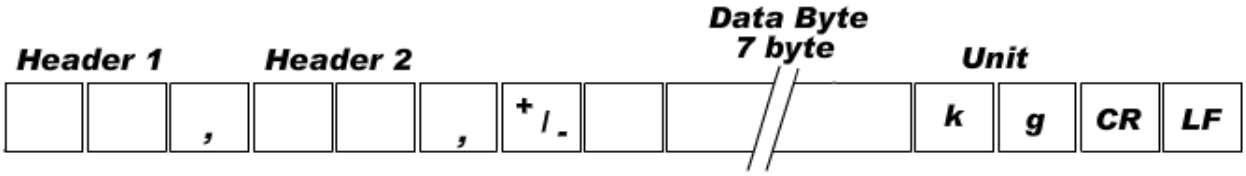
Terminal

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.

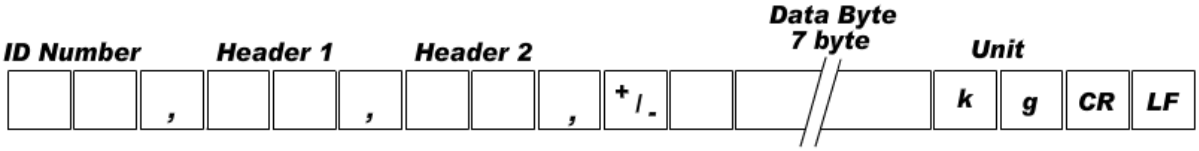
### 6-1-3. Data Format

**1. Data Format1 : ID Number is not be transferred.(Refer "FUNCTION 305-00" setting)**



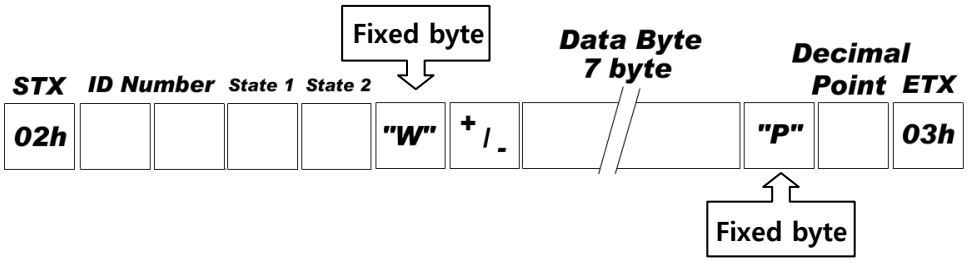

| Header1 | Header2 |
|---|---|
| OL : OVER LOAD | NT : NET-WEIGHT(Tare is not set) |
| ST : STEADY | GS : when setting TARE |
| US : UNSTEADY | |

**2. Data Format2 : ID Number + Data Transference (Refer F-function 305-01)**



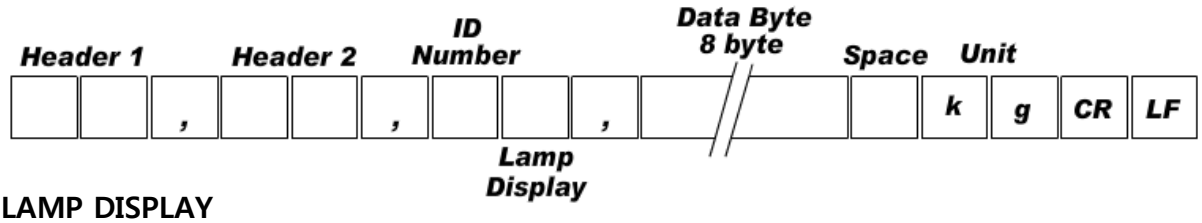

| Header1 | Header2 |
|---|---|
| OL : OVER LOAD | NT : NET-WEIGHT(Tare is not set) |
| ST : STEADY | GS : when setting TARE |
| US : UNSTEADY | |

**3. Data Format3 : ID Number + State (F305-03 setting)**




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

**4. CAS Format (305-03 / 22byte)**



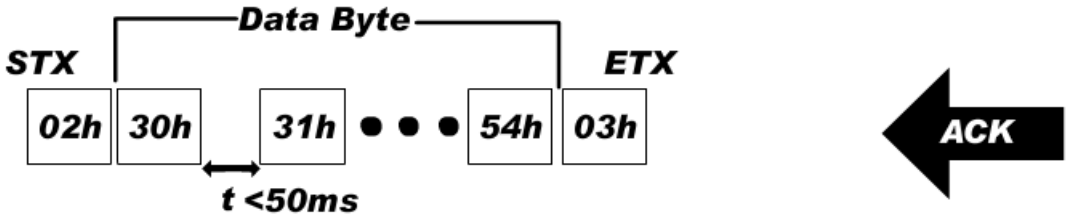

**LAMP DISPLAY**

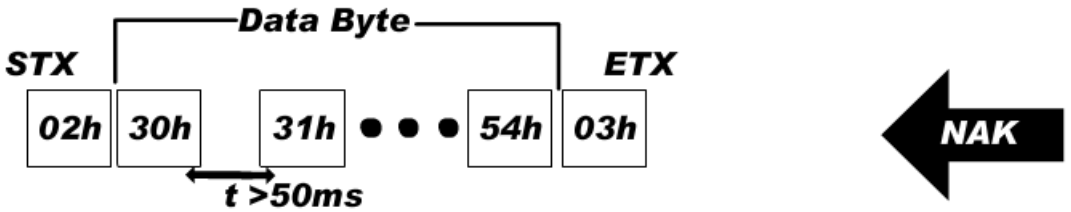
| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | STEADY | 1 | Hold | Print | Gross Weight | TARE | ZERO |

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

### 6-1-4. Command Mode (F303-00 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.

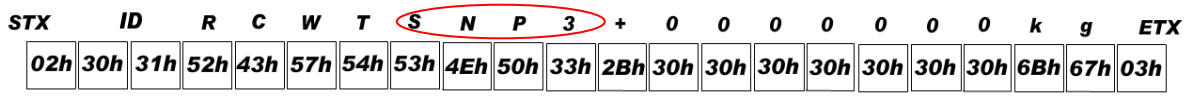
## Read Command

### 1.Current Weight data

| | |
|---|---|
| **ASCII :** STX ID(2Byte) RCWT ETX | **HEX :** 02 30 31 52 43 57 54 03 |
| **SI300response** | 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)**<br>**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

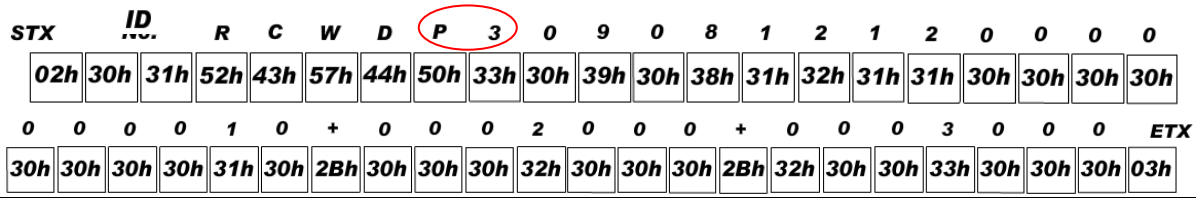



### 2. Indicator memory data

| | |
|---|---|
| **ASCII :** STX ID(2Byte) RCWD ETX | **HEX :** 02 30 31 52 43 57 44 03 |
| **SI300response** | 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

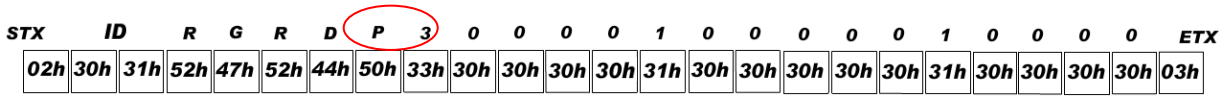



### 3. Grand Total data

| | |
|---|---|
| **ASCII :** STX ID(2Byte) RGRD ETX | **HEX :** 02 30 31 52 43 57 44 03 |
| **SI300response** | 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



| 4.Finished Weight data | |
|---|---|
| **ASCII :** STX ID(2Byte) RFIN ETX | **HEX:** 02 30 31 52 46 49 4E 03 |
| **SI300response** | 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 |
| **SI300response** | 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 |
| **SI300response** | 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 |
| **SI300response** | 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)

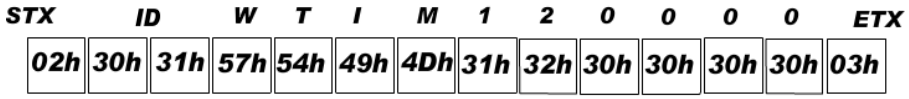
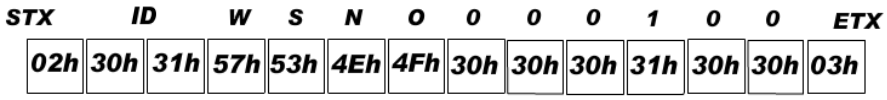
Min. interval is changed when data's length & speed are changed.

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 |
| **SI300response** | 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 |
| **SI300response** | 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 |
| **SI300response** | 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 |
| **SI300response** | 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 |
| **SI300response** | normal: STX ID ACK ETX error: STX ID NAK ETX |
| **PRINT**<br>**When transfer format, "F356" : plus line" and "F304 : checksums are not applied.** | |
| **ASCII :** STX ID(2Byte) WPRT ETX | **HEX:** 02 30 31 57 50 52 54 03 |
| **SI300response** | 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 |
| **SI300response** | 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 |
| **SI300response** | 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<br>STX ID W D A T 0 9 0 8 1 2 ETX<br>02h 30h 31h 57h 44h 41h 54h 30h 39h 30h 38h 31h 32h 03h | |
| **SI300response** | 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   | |
| **SI300response** | normal: STX ID ACK ETX error: STX ID NAK ETX |
| **Change S/N** | |
| **ASCII :** STX ID(2Byte) WSNO S/N(6byte)ETX | |
| Ex) S/N is changed to 100   | |
| **SI300response** | normal: STX ID ACK ETX error: STX ID NAK ETX |

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 F303-00.

## ■ 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 SI300response**

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

**SI300response 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 |

**SI300Response 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 |

**SI300Response 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 |

**SI300Response to PC**

| STX | ID | ACK | 6 | C | ETX |
|---|---|---|---|---|---|
| 02h | 30h | 31h | 06h | 36h | 43h | 03h |

Check Sum

Normal operation

| STX | ID | NAK | 7 | B | ETX |
|---|---|---|---|---|---|
| 02h | 30h | 31h | 15h | 37h | 42h | 03h |

Check Sum

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 (F303-02 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 (F111-01)**

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

**Continuous Print Format(F352-00)**

```
============================
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(F352-01)**

```
============================
          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, F358-01)**

# 7. Error & Treatment

## 7-1. Load Cell Installation

| Error | Cause | Treatment | Remarks |
|---|---|---|---|
| Weight Value is unstable | 1) Load cell broken<br>2) Load cell isolation resistance error<br>3) Weighing part touches other devices or some weight is on the weighing part<br>4) Summing Board Error | 1) Measure input/output resistance of Load cell.<br>2) Measure Load cell isolation resistance | 1. Input Resistance of "EXC+" and "EXC-" is about 400Ω ±30<br>2. Output Resistance of "SIG+" and "SIG-" is about 350Ω ±3.5<br>3. Isolate Resistance is more than 100MΩ |
| Weight Value is increased regular rate, but not return to "Zero" | 1) Load cell Error<br>2) Load cell connection Error | 1) Check Load cell connection<br>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<br>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<br>2) Loading over than Max. Capacity | 1) Load cell Check<br>2) Load cell connection Check<br>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<br>(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<br>2. Sig+ and Sig- wire connection error<br>3. Test weight is not loaded | Check standard weight's weight with set value.<br>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<br>2. Sig+ and Sig- wire connection error<br>3. Test weight is not loaded | Check standard weight's weight with set value.<br>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<br>- Load cell check<br>- Load cell cable and connecting condition check |

## 7-3. Digital Weighing Indicator

| Display | Cause | Treatment |
|---|---|---|
| "CELL-Er"<br>or<br>"OUEr" | 1. Load cell Error<br>2. Load cell cable Error<br>3.Load cell connection Error<br>4. A/D Board Error<br>5.If Analogue value is over 1,040,000.<br>※ When weigh "-" value, If it is over set max capa, "OVER" is displayed.<br>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.<br>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.<br>3. Try to connect the indicator's A/D with the other indicator.<br>4. Check the power and connection of terminal. |
| "UNPASS" | 1. Power is ON, when some materials are on weighing part.<br>※ 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.<br>※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.<br>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

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|---|---|
| **Product** | Digital Weighing Indicator |
| **Model** | SI300` |
| **Serial No.** | |
| AUTHORIZED STAMP | |