Digital Weighing Indicator

CTI 400D

User Manual

CURIOSITY TECHNOLOGY

CONTENTS

1. BEFORE INSTALLATION

Caution / Warning Marks

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

This mark cautions the possibility to arrive serious human body injury or product lose in case of wrongly used.

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Inquiries

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

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2. INTRODUCTION

2-1. Introduction

Thank you for your choice of CTI 400D Industrial Digital Weighing Indicator.

This "CTI 400D" model is high-control performance weighing Indicator.

This "CTI 400D" model has Output Interface, Serial Communication, Modbus, Analog Output and RS 232C Communication.

Please review and learn this instruction Manual and enjoy your process efficiency with "CTI 400D" Digital Weighing Indicator.

2-2. Cautions

1. Don't drop on the ground and avoid serious external damage on item.
2. Don't install under sunshine or heavy vibrated condition.
3. Don't install place where high voltage or heavy electric noise condition.
4. When you connect with other devices, please turn off the power of item.
5. Avoid from water damage.
6. For the improvement of function or performance, we can change item specification without previous notice or permission.
7. Item's performance will be up-dated continuously base on previous version's performance.

2-3. Features

1. CTI 400D model is standard size indicator which is easy to install on the panel.
2. Front panel is covered with Polycarbonate film, strong against dust and water.
3. RS232 serial interface is standard installed
4. User can choose various options;

- RS232C / RS422, RS485

3. SPECIFICATION

3-1. Specification

Content		Specification
Digital Load Cell Interface	Load cell Excitation	DC +12V
	Connect with Load cell	Max 8EA
	Communication with Load cell	RS485
	Communication Baud Rate	115,200bps
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 Corner Adjustment Axis Adjustment
	Display	6 digit, 25.4mm(1inch) Red FND for Numbers 7 digit, Red LED for Weight unit 8 digit, Green LED for State alarm 12 digit Greed LED for Arrow
	Key Pad	14pcs Standard Key pad
	Additional Digital Input	4pcs external input key
Communi-cation	Serial Port 1 (RS-232C)	Data Transference, Command Mode, Serial Printer Mode
Power	AC : 110~240V, Maximum Power Consumption 14W	
Size	200mm(W) x 100mm(H) x 126.5mm(D)	Weight : 1230g

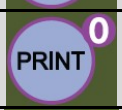
3-2. Front Display

3-2-1. Front Display

3-2-2. State LED Lamp

CONDITION MARK	CONTENT
STEADY	When the weight is stable, ON.
ZERO	When the current weight is zero, ON.
TARE	When the "TARE" function is set, ON.
HOLD	When the "HOLD" function is set, ON.
TxD	When indicator sends date out through serial communication.
RxD	When indicator receives date out through serial communication.
PRT	When the weighing data is printed, ON.
IN1	When external input 1 terminal is input, ON..
IN2	When external input 2 terminal is input, ON..
IN3	When external input 3 terminal is input, ON..
IN4	When external input 4 terminal is input, ON..
IN5	When external input 5 terminal is input, ON..
IN6	When external input 6 terminal is input, ON..

3-3. Key Operation

	- Press for 3 secs to enter Function setting mode.
	- Press for 3 secs, to enter "Hidden function" mode.
	- Make the weight value to Zero (unable to use during "Hold" function or when the weight is zero) - Number 1
	- Set the TARE Function - Number 2
	- Set the TARE Reset - number 3
	- Set the "HOLD" Function - number 4
	- When "HOLD" function is set, HOLD Reset - number 5
	- number 6
	- number 7
	- number 8
	- number 9
	- number 0
	- Cancel or Move to previous step.
	- Save and Move to next step.

3-4. Key Combination

	Double tare setting (Once tare is set, Another tare is overlapped.)
	Print the Sub-total out
	Print the Grand-total out
	Delete the Sub-total weight
	Delete the Grand-total weight

Tip

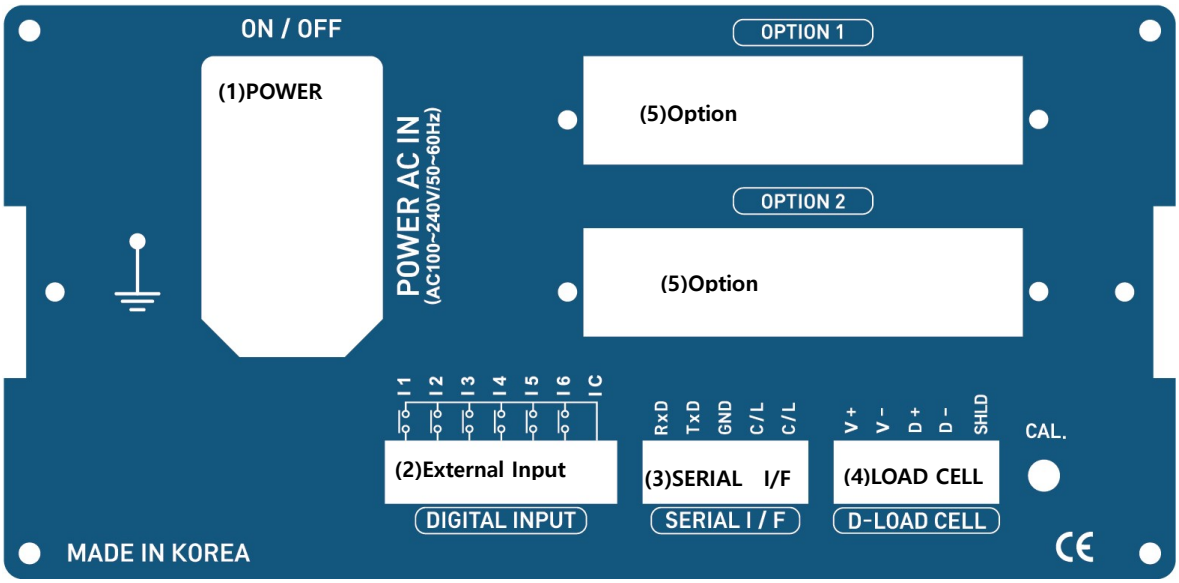
Max accumulated weighing count : 999,999times

Over 999,999times → return to "0" time

Max accumulated weight display : 999999999 (g, kg, ton)

Over 999,999,999 (g, kg, ton) → return to "0" (g, kg, ton)

3-5. Real Panel



(1) AC Power input terminal

(2) External input terminal: User selectable 4EA

(3) Serial Interface terminal

Terminal	RxD	TxD	GND	C/L	C/L
RS – 232	Rx	Tx	GND	C/L	C/L

(4) Loadcell Input

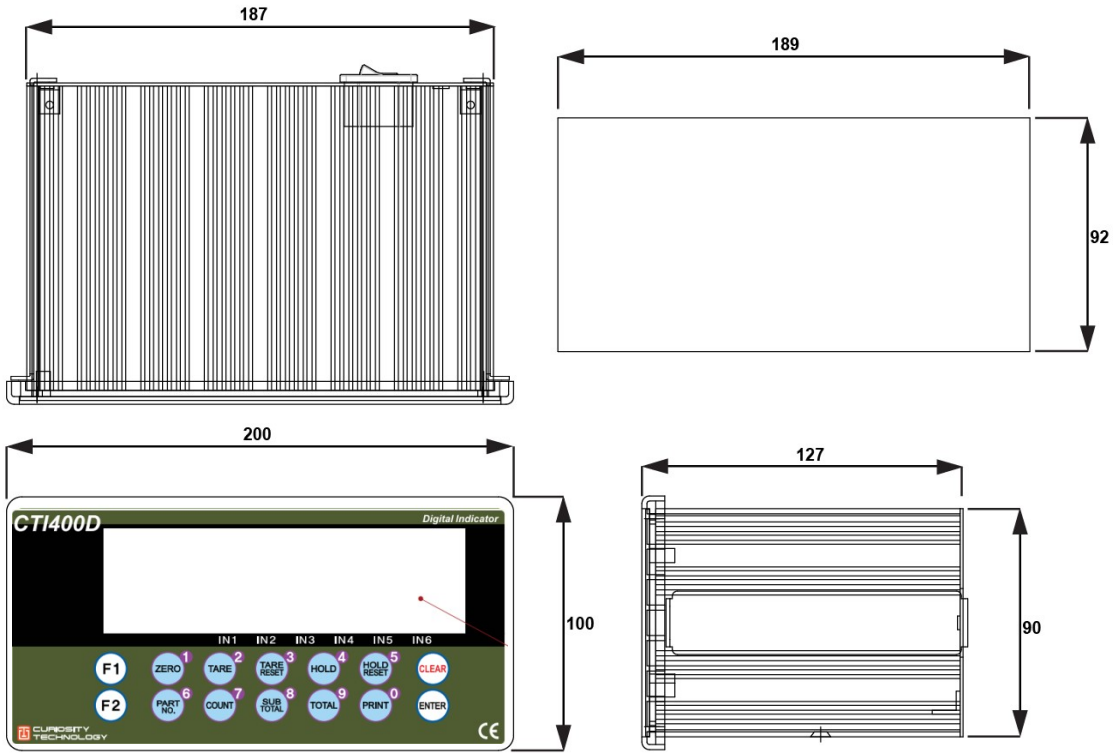
Terminal	V+	V-	D+	D-	SHLD
Load Cell	V+	V-	D+	D-	SHEILD

Caution

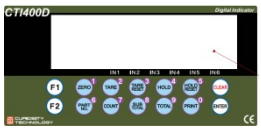
Please make connection after checking the Comm. and other specification on the label attached on cover plate.

4. INSTALLATION

4-1. External Dimension & Cutting Size



4-2. Installation Components



CTI 400D Body

User Manual

4-3 Load cell Installation

Digital Load Cell Wire Connection (In case of CURIOTEC CO.,LTD.'s Load cell)
It depends on the manufacturer of load cell. Please check the specification.

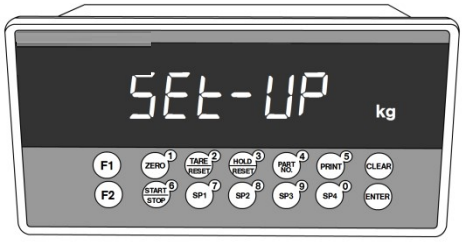
■ **Load Cell Installation**

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 there is some temperature difference around Load cell, it can cause wrong weight measurement.
4. Don't do Welding job or Arc discharge around installation place. But, there is no choice, please disconnect power cable and Load cell cable.
5. If you measure static electricity material, please make earth between down part and upper part of Load cell.

5. SET-UP

5-1. Set-up mode

5-1-1. How to enter Set-up mode



Press F1 key for 3 secs	If "SET-UP" is displayed, it is complete to enter the set-up mode.

- **How to enter each set mode**

SET-UP mode		**Press F1 key for 3 secs → ZERO**
Test mode	Digital value	**Press F1 key for 3 secs → TARE → ZERO**
	Display	**Press F1 key for 3 secs → TARE → TARE**
	Key Input	**Press F1 key for 3 secs → TARE → TARE RESET**
	External Input	**Press F1 key for 3 secs → TARE → HOLD**
	Analog out	**Press F1 key for 3 secs → TARE → COUNT**
	Serial I/F(Basic)	**Press F1 key for 3 secs → TARE → SUB TOTAL**
	Serial I/F(Option)	**Press F1 key for 3 secs → TARE → TOTAL**

* ENTER **key to save data**

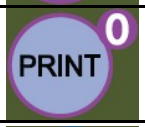
* CLEAR **key to cancel or back to previous step**

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

5-2-1. Calibration

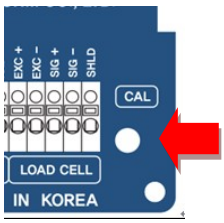
Calibration is the process of adjusting weight balance between "Real Weight" on the Load Cell and "Displayed weight of Indicator". When you replace Load Cell or Indicator, you have to do Calibration process once again.

(When you enter the weight calibration mode, tare, hole, print function would be initialized.)

Calibration key function			
Key button	**Function**	**Key button**	**Function**
	No. 1		No. 6
	No. 2		No. 7
	No. 3		No. 8
	No. 4		No. 9
	No. 5 / Increase the number		No. 0 / Decrease the number
	back to previous step		Enter

Step1. Start Test Weight Calibration Mode

1) Remove "CAL-BOLT" on the rear panel, and press "CAL - LOCK S/W" inside.



2) When 

is displayed, press key F1.

3) Press CLEAR to back to the previous step.

Step2. Setting "Capacity of weighing Scale

1) After 

is displayed,

2) Set the capacity of weighing scale using the number keys.

3) Press key ENTER to save.

4) Press CLEAR to back to the previous step.

Ex : If you want to set Max Capacity as 50.00kg and division as 0.01kg, just input "50"

Step3. Decimal point and division setting

1) When 

is displayed,

2) Move the decimal point by key PRINT 0.

3) You can set the division by key TOTAL 9.

4) Press key ENTER to save.

5) Press key CLEAR to back to the previous step.

- **You can set three decimal places to the maximum (0, 0.0, 0.00, 0.000), and division can be selected among 1, 2, 5, 10, 20, 50.**

.

Step4. Measuring the "DEAD" Weight of Weighing Scale.

1) When 

is displayed,

2) Press 

, then indicator will start to calculate the dead weight of scale part automatically while there is nothing on the scale part.

3) After 

is displayed, the indicator would calculate and save the value of the dead automatically.

- **In the case that "Er-009" is displayed during calibration, remove the cause of the force or vibration on the scale part and reattempt the process again.**

Step 5. Corner and Axis Adjustment

1) 

is displayed, select whether you let the indicator proceed the "Corner and Axis Adjustment".

2) Press 

, Proceed to corner adjustment. (move to explanation 5-4)

3) Press 

, Proceed to axis adjustment. (move to explanation 5-5)

4) Press 

, Proceed to calibration without corner or axis adjustment.

Step 6. Setting of 1st Max capacity (Multi calibration)

1) After 

is displayed, enter the first max capacity using number keys (0~9).

2) After entering the first max capacity, press 

key for the next step.

- **The sum of the set weight of the 1st to 10th weights must be equal to the maximum weight. If the maximum weight is 100kg, 1st and 2nd set weight is 50kg each, then CAPA-1 and CAPA-2 only need to be finished.**

Step 7. Calculating 1st span value

1) When 

is displayed, enter the value of the first test weight using number keys (0~9).

2) Press 

for the next step.

3) When 

is displayed, load the test weight up.

4) Press 

, then 

will be displayed.

5) Indicator will calculate span value for 10 secs.

6) After calculation, span value will be displayed on the display.

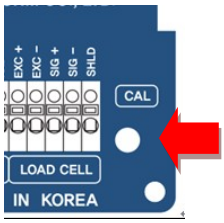
7) Press 

to finish the calibration process, then current weight will be displayed.

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

With "Simulation Calibration Mode", you can make simple calibration without test weight, let the indicator calculate "Load cells' max capacity" and "Max Output Rate(mV)".

Step 1 Simulation Calibration Mode Start



1) Remove "CAL-BOLT" on the rear panel, and press "CAL - LOCK S/W" inside.
2) When 

is displayed, press F2.
3) Press CLEAR to cancel or back to the previous step.

Step 2 Setting Max Capacity of Load Cell

1) When 

is displayed, Set max capacity of load cell using number keys 0~9.
2) Press ENTER to save.
3) Press CLEAR to cancel or back to the previous step.

Ex : If you want to set Max Capacity of load cell as 50.00kg and division as 0.01kg, just input "50"

Step3. Decimal point and division setting

1) When 

is displayed,
2) Move the decimal point by key PRINT 0.
3) You can set the division by key TOTAL 9.
4) Press key ENTER to save.
5) Press key CLEAR to back to the previous step.

- **You can set three decimal places to the maximum (0, 0.0, 0.00, 0.000), and division can be selected among 1, 2, 5, 10, 20, 50.**

Step4. Measuring the "DEAD" Weight of Weighing Scale.

1) When 

is displayed,

2) Press 

, then indicator will start to calculate the dead weight of scale part automatically while there is nothing on the scale part.

3) After 

is displayed, the indicator would calculate and save the value of the dead automatically.

In the case that "Er-009" is displayed during calibration, remove the cause of the force or vibration on the scale part and reattempt the process again.

Step 5. Corner and Axis Adjustment

1) 

is displayed, select whether you let the indicator proceed the "Corner and Axis Adjustment".

2) Press 

, Proceed to corner adjustment. (move to explanation 5-4)

3) Press 

, Proceed to axis adjustment. (move to explanation 5-5)

4) Press 

, Proceed to calibration without corner or axis adjustment.

5) Press 

to finish the calibration process, then current weight will be displayed.

Step 6. Setting Max Capacity of Scale

1) Re-Setting Max Capacity of Scale in HF 23

2) HF 23 need not be re-set, If Capaclty of Load cell and Capacity of Scale are the same.

5-4. Corner Adjustment

During the fifth step of both calibration, you can choose to proceed to "Corner Adjustment". In this step, you can adjust the error in the measured weight.

1) When 

is displayed, select whether you let the indicator proceed the "Corner and Axis Adjustment".

2) Press 

, Proceed to corner adjustment.

Step 1. Setting the Value of Test Weight

1) When 

is displayed, enter the value of test weight with number keys 0~9.

2) Press 

for the next step.

Step 2. Calculating the 1st span value

1) When 

is displayed, load the test weight up onto 1st digital load cell.

2) Press 

for the next step.

Step 3. Corner Adjustment of the 1st Digital Load Cell

1) After 

is displayed, Indicator will calculate corner adjustment automatically for 10 secs.

2) After calculation, you will move to the step of "calculating the 2nd span value".

3) Repeat step 2 and 3 as many as the load cells you have. (HF-06)

4) After corner adjustment,

→ Test Weight Calibration : move to the 6th step

→ Simulation Calibration : finish the process

5-5. Axis Adjustment

During the fifth step of both calibration, you can choose to proceed to "Axis Adjustment". In this step, you can adjust the error in the measured weight.

1) When 

is displayed, select whether you let the indicator proceed the "Corner and Axis Adjustment".

2) Press F2, Proceed to corner adjustment.

Step 1. Setting the Value of Test Weight

1) When 

is displayed, enter the value of test weight with number keys 0~9.

2) Press ENTER for the next step.

Step 2. Calculating the 1st span value

1) When 

is displayed, load the test weight up onto the surface between 1st and 2nd digital load cell.

2) Press ENTER for the next step.

Step 3. The 1st Axis Adjustment

1 After 

is displayed, Indicator will calculate axis adjustment automatically for 10 secs.

2) After calculation, you will move to the step of "calculating the 2nd Axis Adjustment"

3) Repeat step 2 and 3 as many as the half of the load cells you have.

4) After axis adjustment,

→ Test Weight Calibration : move to the 6th step

→ Simulation Calibration : finish the process

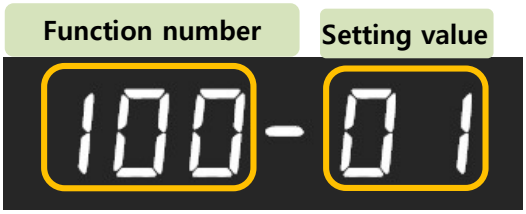
5-6. F-FUNCTION Setting

Function setting could set the indicator to operate perfectly with surrounding condition.

5-6-1. Starting F-FUNCTION Mode

1) Press the F1 key for 3seconds.

2) When SEt-UP is displayed, press ZERO



※ F1 : Increase Function No.

※ F2 : Select Function No / Setting Value and enter the value

3) Select Function number using number keys and Press ENTER .to adjust the function.

4) Enter the setting value and press ENTER and save it.

5) When the data is saved SAVE will be displayed and move to next function number.

6) Press CLEAR to cancel or back to the previous step.

5-6-2. F-Function List ("●" means the initial value of the product.)

Equipment No. setting (ID No.)			
101	01	01 ~ 99	Enter ID No. using number keys
Weight–Back up Mode			
102		00	Normal mode
	●	01	Weight Back up Mode(Zero)
Weighing Data Save Method (Refer to the page 27)			
103	●	00	Manual : Whenever input print key
		01	Auto : At every steady states
		02	Auto : At the first steady states
		04	Manual / Auto at every steady states
		05	Manual / Auto at the first steady states

◆Weighing Data Save Method

Weighing Data Save Method (Function no. 103)		Input Print	Print Output Data	Save data
00	Manual : Whenever input print key	○	Current Weight	Current Weight
		X	X	X
01	Auto : At every steady states	○	Recent Steady Weight	X
		X	Steady Weight	Steady Weight
02	Auto : At the first steady states	○	Recent Steady 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

Display Up-Date Speed			
104	05	01 ~ 09	01 : Slow (1 time per sec) ~ 09 : fast (60times per sec)
Buzzer sound (External input detection)			
108	●	00	Buzzer sound
		01	No Buzzer sound
Drib, bulk weight setting For Multi-calibration			
109	09	00 ~ 99	Drib, bulk weight setting For Multi-calibration 01 ~ 99% (of Maximum Capacity)
Unit			
110		00	g
	●	01	kg
		02	ton
Equipment and Print Language			
111	●	00	Korean
		01	English
Zero Range (Near Zero)			
201	100	0 ~ 999999	Zero range setting to confirm the empty state of scale.
Auto Zero Range			
202	00	00 ~ 99	If the scale becomes steady under the range of set value, the scale will display "0". (Unit: 0.25 gradation)
Steady Range			
203	02	01 ~ 99	Check steady state by setting steady range per unit time (Unit: 1 Digit)
Steady condition check time			
204	10	01 ~ 99	Check steady state by setting steady condition check time per unit weight. (Unit: 0.1 sec)
Digital Filter			
205	30	01 ~ 99	Weak vibration Strong vibration 99 (Weak) ~ 01 (Strong)
Zero key operation mode			
206	●	00	Always active
		01	Active under steady condition only
Tare Key operation mode			
207	●	00	Always active
		01	Active under steady condition only

Hold display weight when stable for set time			
208	●	00	Disuse
		01~09	No changing after weight stable during setting time
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
※ **Warning :** If you set "active over 10%", It can pass beyond the bounds of load cell input range or maximum capacity. In this case, "Cell-Err" or incorrect weight can be displayed.			
Tare key Operation Range			
210		00	Active within 10% of Max Capacity
		01	Active within 20% of Max Capacity
	●	02	Active within 50% of Max Capacity
		03	Active within 100% of Max Capacity
Auto Zero function under Tare state			
211	●	00	Disuse
		01	Use
Tare Delay Time			
212	00	00 ~ 10	00 : Disuse 01 ~ 10 : Use (Unit : 1 sec)
Tare Reset			
214	●	00	Manual : Whenever input Tare key
		01	Auto : When the weight is under Zero range
		02	Auto : After the weight becomes steady
Auto Tare reset Time			
215	00	00 ~ 09	Set the tare reset after set value 00 : Disuse 01 ~ 09 : use (Unit : 1sec)
Hold Mode			
216	●	00	Sample Hold : Hold and display the current weight
		01	Peak Hold : Hold and display the maximum weight while weighing

		02	Average Hold : Hold and display the average weight during set time			
Hold Delay Time						
217	00	00 ~ 10	00 : Disuse 01 ~ 10 : Use (Unit : 1 sec)			
Hold reset at the near zero						
218	●	00	Disuse			
		01	Use			
Hold reset delay time						
219	00	00 ~ 10	00 : Disuse 01 ~ 10 : Use (Unit : 1 sec)			
Average Hold Time						
220	10	01 ~ 99	Hold average weight during set time (Unit: 1 sec)			
Minus (-) mark display						
221	●	00	Display			
		01	No Display			
Under UNPASS/OVERLOAD state, weight display						
222	●	00	Display			
		01	No Display			
External Digital Output 1 (IN1)						
233		00	Disuse		06	Hold Reset
	●	01	Zero		07	Hold/Hold Reset
		02	Tare		08	Print
		03	Tare Reset		09	Sub-total Print
		04	Tare/Tare Reset		10	Total Print
		05	Hold			
External Digital Output 2 (IN2)						
234		00	Disuse		06	Hold Reset
		01	Zero		07	Hold/Hold Reset
	●	02	Tare		08	Print
		03	Tare Reset		09	Sub-total Print
		04	Tare/Tare Reset		10	Total Print
		05	Hold			
External Digital Output 3 (IN3)						
235		00	Disuse		06	Hold Reset
		01	Zero		07	Hold/Hold Reset
		02	Tare		08	Print

	●	03	Tare Reset		09	Sub-total Print
		04	Tare/Tare Reset		10	Total Print
		05	Hold			
External Digital Output 4 (IN4)						
236		00	Disuse		06	Hold Reset
		01	Zero	●	07	Hold/Hold Reset
		02	Tare		08	Print
		03	Tare Reset		09	Sub-total Print
		04	Tare/Tare Reset		10	Total Print
		05	Hold			
External Digital Output 5 (IN5)						
237		00	Disuse		06	Hold Reset
		01	Zero		07	Hold/Hold Reset
		02	Tare	●	08	Print
		03	Tare Reset		09	Sub-total Print
		04	Tare/Tare Reset		10	Total Print
		05	Hold			
External Digital Output (IN6)						
238		00	Disuse		06	Hold Reset
		01	Zero		07	Hold/Hold Reset
		02	Tare		08	Print
		03	Tare Reset		09	Sub-total Print
		04	Tare/Tare Reset	●	10	Total Print
		05	Hold			
Zero state lamp output standard						
251	●	00	Near Zero			
		01	Zero			
Parity / Stop bit						
301	●	00	DATA bit (8bit)	STOP bit (1bit)		parity bit (Non)
		01	DATA bit (8bit)	STOP bit (1bit)		parity bit (Odd)
		02	DATA bit (8bit)	STOP bit (1bit)		parity bit (Even)
		03	DATA bit (7bit)	STOP bit (1bit)		parity bit (Odd)
		04	DATA bit (7bit)	STOP bit (1bit)		parity bit (Even)

Communication Speed			
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
Communication Mode			
303	●	00	Simplex (Stream Mode)
		01	Duplex (Command Mode)
		02	Print Mode
		03	Digital Load Cell Indicator Protocol
"Check-Sum" under command mode (F303-01 only)			
304	●	00	Disuse
		01	Use (Refer the 6-1-10, included Error code)
Format under Stream Mode			
305	●	00	Format 1 (19 byte)
		01	Format 2 (22 byte)
		02	Format 3 (17 byte)
		03	Format 4 (22 byte)
		04	Format 5 (15 byte)
transference under stream mode			
306	●	00	Continuously
		01	Single time on every steady state
		02	Single time at the first steady point
		03	Single time output after weighing finish
		04	When input Print key

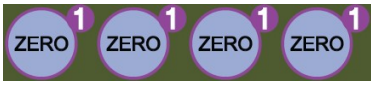
Parity / Stop bit (Option Port)					
308	●	00	DATA bit (8bit)	STOP bit (1bit)	parity bit (Non)
		01	DATA bit (8bit)	STOP bit (1bit)	parity bit (Odd)
		02	DATA bit (8bit)	STOP bit (1bit)	parity bit (Even)
		03	DATA bit (7bit)	STOP bit (1bit)	parity bit (Odd)
		04	DATA bit (7bit)	STOP bit (1bit)	parity bit (Even)
Communication Speed (Option Port)					
309		00	2,400bps		
		01	4,800bps		
	●	02	9,600bps		
		03	14,400bps		
		04	19,200bps		
		05	28,800bps		
		06	38,400bps		
		07	57,600bps		
		08	76,800bps		
		09	115,200bps		
Communication Mode (Option Port)					
310		00	Simplex (Stream Mode)		
		01	Duplex (Command Mode)		
	●	02	Print Mode		
		03	Modbus (RTU)		
“Check-Sum” under command mode (F303-01 only) (Option Port)					
311	●	00	Disuse		
		01	Use (Refer the 6-1-10, included Error code)		
Format under Stream Mode (Option Port)					
312	●	00	Format 1 (19 byte)		
		01	Format 2 (22 byte)		
		02	Format 3 (17 byte)		
		03	Format 4 (22 byte)		
		04	Format 5 (15 byte)		
Transference under stream mode (Option Port)					
313	●	00	Continuously		
		01	Single time on every steady state		
		02	Single time at the first steady point		
		03	Single time output after weighing finish		

		04	When input Print key
Print Format			
352	●	00	Continuously
		01	Single page
Print Delay time			
354	00	00 ~ 09	Print after set time (Unit : 1 sec)
Paper Withdraw Rate setting (After Continuous/Single Print)			
355	00	00 ~ 09	The line increases by 1 for set value increase after printing
Paper Withdraw Rate setting (After Sub-total/Total Print)			
356	00	00 ~ 09	The line increases by 1 for set value increase after printing
Analog Output Applying Weight Range			
401	●	00	Absolute number (+,-)
		01	Positive number (+)
Analog Output Direction			
402	●	00	Forward
		01	Reverse
Analog Output Standard			
403	●	00	Display value is Max Capacity
		01	Display value is SP1 setting standard
		02	Display value is SP2 setting standard
		03	Display value is SP3 setting standard
		04	Display value is SP4 setting standard
		05	Display value is Max Capacity (When you set tare, the GROSS weight will be displayed)

5-6-3. Hidden Function

How to enter Hidden function setting mode : Press 

for 3 seconds and input your password.

Default password is 

(1111). Press 

after input your password.

Serial Number Check	
HF01	Check your device's serial number
S/W Version Check	
HF02	Check the currently applied program version
H/W Version Check	
HF03	Check the currently applied hardware version
DATE(Y,M,D) Check / Modification	
HF04	Check the date or adjust when it is wrong.
TIME(H,M,S) Check / Modification (24Hours)	
HF05	Check the time or adjust when it is wrong.
Digital Load Cell Setting	
HF06	Set the number of digital load cell (able to be set 1~8)
1st Digital Load Cell ID	
HF07	Set the 1st digital load cell ID (able to be set 1~999999)
2nd Digital Load Cell ID	
HF08	Set the 2nd digital load cell ID (able to be set 1~999999)
3rd Digital Load Cell ID	
HF09	Set the 3rd digital load cell ID (able to be set 1~999999)
4th Digital Load Cell ID	
HF10	Set the 4th digital load cell ID (able to be set 1~999999)
5th Digital Load Cell ID	
HF11	Set the 5th digital load cell ID (able to be set 1~999999)
6th Digital Load Cell ID	
HF12	Set the 6th digital load cell ID (able to be set 1~999999)
7th Digital Load Cell ID	
HF13	Set the 7th digital load cell ID (able to be set 1~999999)
8th Digital Load Cell ID	
HF14	Set the 8th digital load cell ID (able to be set 1~999999)

1st DLC Span Value			
HF15	Check the 1st DLC Span Value		
2nd DLC Span Value			
HF16	Check the 2nd DLC Span Value		
3rd DLC Span Value			
HF17	Check the 3rd DLC Span Value		
4th DLC Span Value			
HF18	Check the 4th DLC Span Value		
5th DLC Span Value			
HF19	Check the 5th DLC Span Value		
6th DLC Span Value			
HF20	Check the 6th DLC Span Value		
7th DLC Span Value			
HF21	Check the 7th DLC Span Value		
8th DLC Span Value			
HF22	Check the 8th DLC Span Value		
Maximum Capacity Weight Check			
HF23	Check the max capacity set under test weighing calibration.		
Maximum Capacity Weight Check			
HF23	Check the max capacity set under test weighing calibration.		
I out(4-20mA) / V out(0-10V) Set			
HF29	●	00	4-20mA
		01	0-10V
I out(4-20mA) / V out(0-10V) Minimum Output			
HF30	Set Minimum Analog Output. Press  to enter minum (-) value. (able to be set -20~+20 / default : 0)		
I out(4-20mA) / V out(0-10V) Maximum Output			
HF31	Set Maximum Analog Output. Press  to enter minum (-) value. (able to be set -20~+20 / default : 0)		
Password Setting			
HF49	Set the password for hidden function mode. (4 digit number)  **1 2 3 4 5 6 7 8 9 0** **The password combination can be consisted of 0~9**		

Function Reset	
HF50	Change the all function from first time.
Factory Reset	
HF51	Change the all set value from Factory set value
1st Calibration Value	
HF90	Check the 1st Calibration value.
2nd Calibration Value	
HF91	Check the 2nd Calibration value.
3rd Calibration Value	
HF92	Check the 3rd Calibration value.
4th Calibration Value	
HF93	Check the 4th Calibration value.
5th Calibration Value	
HF94	Check the 5th Calibration value.
6th Calibration Value	
HF95	Check the 6th Calibration value.
7th Calibration Value	
HF96	Check the 7th Calibration value.
8th Calibration Value	
HF97	Check the 8th Calibration value.
9th Calibration Value	
HF98	Check the 9th Calibration value.
10th Calibration Value	
HF99	Check the 10th Calibration value.

5-7. Test Mode

Caution

Before starting the TEST mode, Disconnect all of the indicators and equipment.

- Press 

key for 4 secs to enter SET-UP mode
- When 

is displayed, Press 

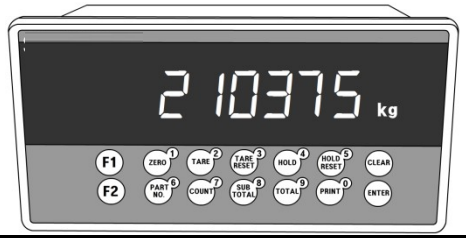
key.
- Display shows 

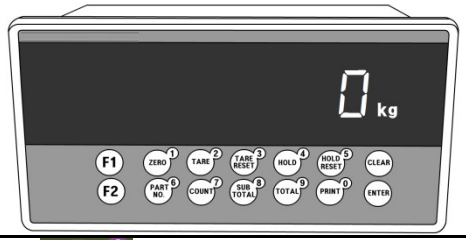
, enter the test mode.
- 

key to cancel or back to previous step

Key button	Test Mode	Key button	Test Mode
	Digital load cell Value		Output
	Display		Analog Output(4~20mA / 0~10V)
	Key Input		Communication Port
	External Input		Communication Port (Option)

5-7-1. Digital value Deviation mode

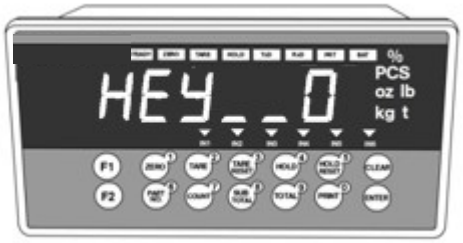




You can check the digital value of each or the whole load cell

Press ZERO 1, display Cell-0
When display "0", Press # 0~8 and Enter key.
1~8 : press key to check the digital value of the relevant load cell
0 : check the digital value of the whole load cell.

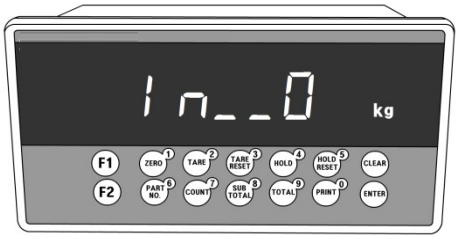
5-7-2. Key check mode



Input keys to check the input on the display.

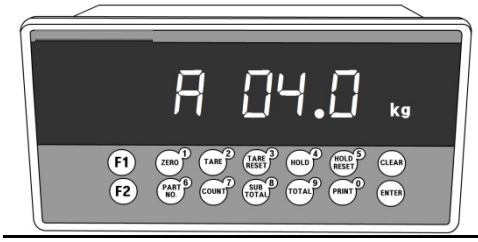
Key button	Display	Key button	Display
ZERO 1	1	SUB TOTAL 8	8
TARE 2	2	TOTAL 9	9
TARE RESET 3	3	PRINT 0	10
HOLD 4	4	ENTER	11
HOLD RESET 5	5	F1	12
PART NO. 6	6	F2	13
COUNT 7	7		

5-7-3 External Input Check Mode



You can check if external input is working well.

5-7-4. Analog Output 4~20mA, 0~10V Check Mode

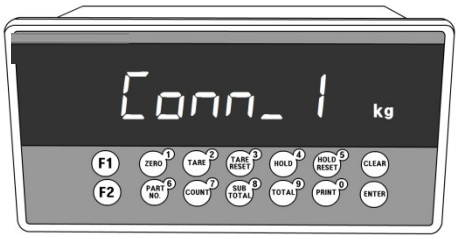


You can simulate the output value of indicator from 0(4mA,0V)~ 100(20mA,10V). If the analog output mode is 4~20mA, "A" will be displayed. If the analog output mode is 0~ 10V, "V" will be displayed.

You can check the analog output by entering the value using direction keys. (unit: 0.1)
If the input value is over the maximum number, the practical analog output will be 100% value.

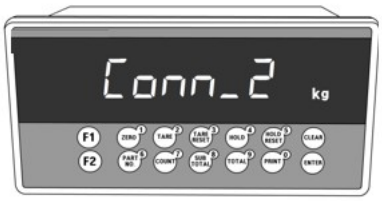
EX) In the case that the mode is 4~20mA, If you input 4.0, the output would be 4mA.
In the case that the mode is 4~20mA, If you input 20.0, the output would be 20mA.
In the case that the mode is 0~10V, If you input 4.7, the output would be 4.7V.
In the case that the mode is 0~10V, If you input 10.0, the output would be 10V.

5-7-5. Basic serial Interface Check Mode



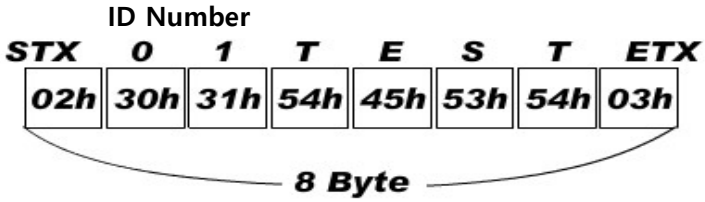
- Under connecting PC and indicator, if test protocol is sent to indicator from PC, indicator will reply response data to the PC.
- Under connecting PC and indicator, if indicator's numeric button is pressed, test protocol will be sent to PC.
- Under connecting the RxD pin and TxD pin with press ENTER key, if "Good" is displayed on FND, the communication state is normal. But if "bad" is displayed on FND, the communication state is abnormal.

5-7-6. Option serial Interface Check Mode



- Under connecting PC and indicator, if test protocol is sent to indicator from PC, indicator will reply response data to the PC.
- Under connecting PC and indicator, if indicator's numeric button is pressed, test protocol will be sent to PC.
- Under connecting the pin 3 and pin4 with press ENTER key, if "Good" is displayed on FND, the communication state is normal. But if "bad" is displayed on FND, the communication state is abnormal.

<Test protocol>



Caution **Main and Option Serial Interface Test cannot be done at the same time.**

5-7-7 Display check mode

(1) Test mode for FND

(2) Each segment on the display will come on one by one.

(3) The 1st~7th segments will stay on until the 8th segment comes on.

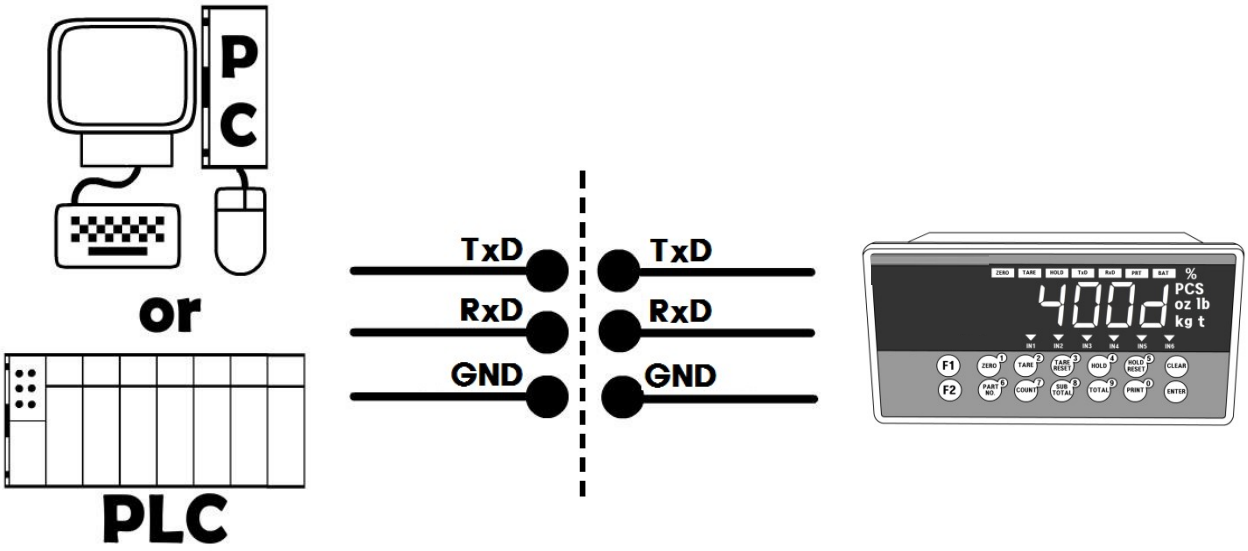
(4) After all of the segments turned on, the segments will repeat the steps 2~4 times more.

6. INTERFACE

6-1. Serial Interface

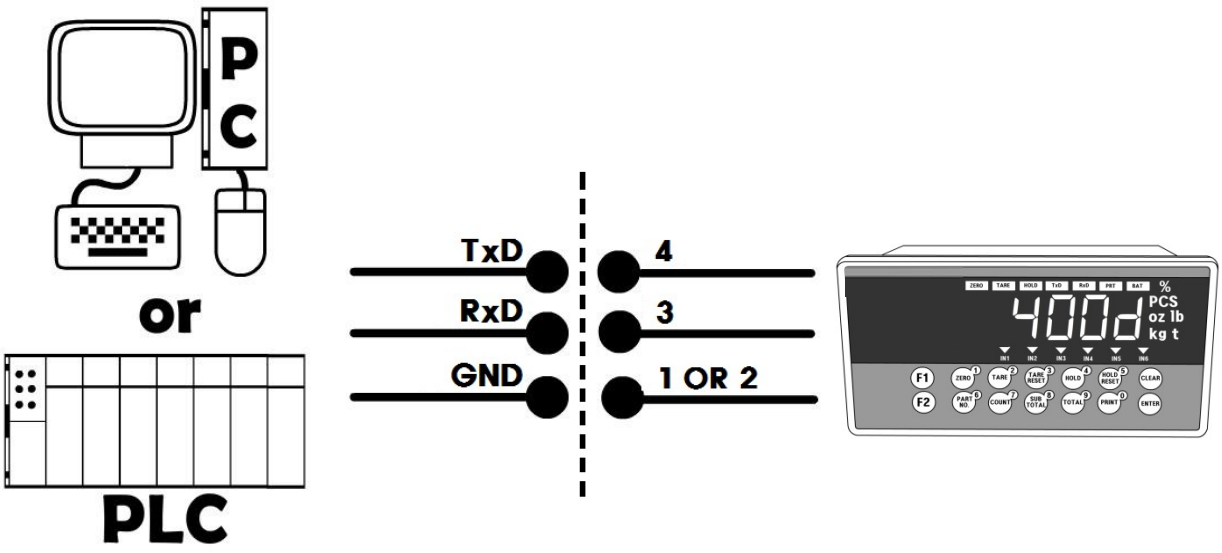
6-1-1. Standard serial interface terminal

(1) RS - 232



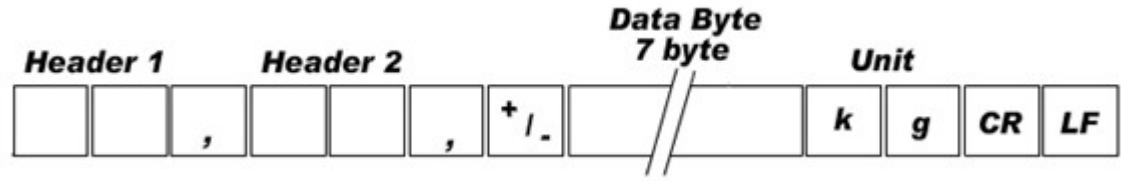
6-1-2. Option serial interface terminal

(1) RS – 232



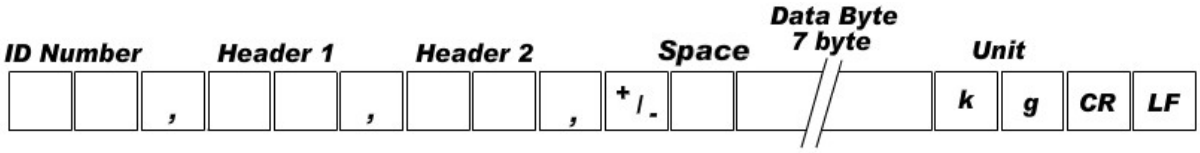
6-1-3. Data Format

(1) Data Format1 : not including ID No. (F305-00) -19byte



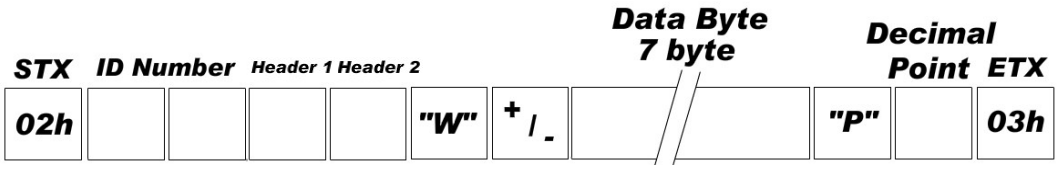
Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT (Tare is not set)
ST : STEADY	GS : NET-WEIGHT (when setting TARE)
US : UNSTEADY	

(2) Data Format2 : Including ID No. (F101 ID setting / F305-01) -22byte



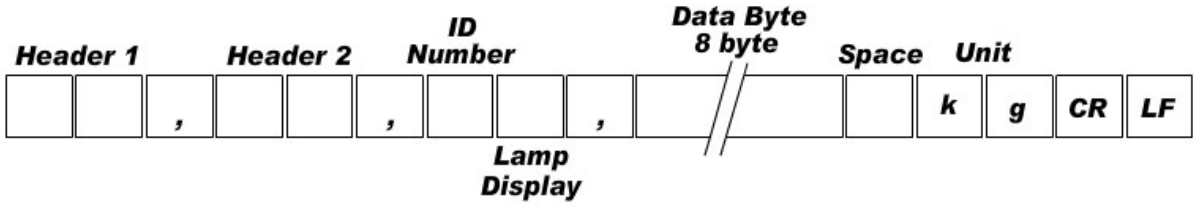
Header1	Header2
OL : OVER LOAD	NT : NET-WEIGHT(Tare is not set)
ST : STEADY	GS : NET-WEIGHT (when setting TARE)
US : UNSTEADY	

(3) Data Format3 : Including ID No. & State (F101 ID setting / F305-02) -17byte



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

(4) Data Format 4 : Including ID No. (F101 ID setting / F305-03) -22byte



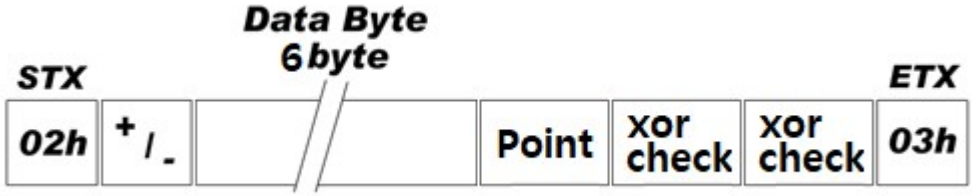
ID Number : Function number 101

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

LAMP DISPLAY

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

(5) Format 5 : 12byte



Byte	Cotent	Note
1	0x02	Start
2	+ or -	Sign
3	Weight Data 1	Upper byte
4	Weight Data 2	⋮
5	Weight Data 3	⋮
6	Weight Data 4	⋮
7	Weight Data 5	⋮
8	Weight Data 6	Lower byte
9	Decimal point	0 ~ 4
10	Xor Checkimg 1	4 upper bytes
11	Xor Checkimg 2	4 lower bytes
12	0x03	End

6-1-4. Command Mode

Under "Command Mode", Indicator will recognize the receipt of Order based on 02h(STX) and 03h(ETX) signal, and transfers 06h(ACK), 15h(NAK). .

Error Code (When setting function number 304-01 or 311-01)			
0 (30h)	Normality	**3 (33h)**	Number data Error
1 (31h)	Check-Sum Error	**4 (34h)**	Excess of write data's allowable range
2 (32h)	Data length Error		

6-1-5. Read COMMAND

Subject	Command	Length of transmission data (by indicator standards)	
		305/312 - 00,01,03,04 Setting	305/312 - 02 Setting
Current Weight	**STX ID RCWT ETX**	**22 byte**	**22 byte**
Current Data	**STX ID RCWD ETX**	**44 byte**	**48 byte**
Sub-total data	**STX ID RSUB ETX**	**29 byte**	**30 byte**
Sub-total counts	**STX ID RSNO ETX**	**14 byte**	**14 byte**
Total data	**STX ID RGRD ETX**	**29 byte**	**28 byte**
Current time	**STX ID RTIM ETX**	**14 byte**	
Current date	**STX ID RDAT ETX**	**14 byte**	
Tare weight	**STX ID RTAR ETX**	**15 byte**	**18 byte**
Current P/N transmission	**STX ID RPNO ETX**	**10 byte**	

6-1-6. Write COMMAND

Subject	Command	Length of transmission data (by indicator standards)	
		305/312 - 00,01,03,04 Setting	305/312 - 02 Setting
Zero Setting	STX ID WZER ETX	8 byte	
Tare Setting	STX ID WTAR ETX	8 byte	
Tare Reset	STX ID WTRS ETX	8 byte	
Hold Setting	STX ID WHOL ETX		8 byte
Hold Reset	STX ID WHRS ETX		8 byte
Print	STX ID WPRT ETX	8 byte	
Sub-total Print	STX ID WSPR ETX	8 byte	
Total Print	STX ID WGPR ETX	8 byte	
Delete Sub-total	STX ID WSTC ETX	8 byte	
Delete total	STX ID WGTC ETX	8 byte	
Time Setting	STX ID WTIM Time (HHMMSS) ETX	14 byte	
Date Setting	STX ID WDAT Date (YYMMDD) ETX	14 byte	
P/N Setting	STX ID WPNO P/N ETX	10 byte	

6-1-7. Read Command Details

<table>
<tr><td colspan="3">Current Weight
(F305-00, 01, 03, 04 or F312-00, 01, 03, 04)</td></tr>
<tr><td colspan="2">ASCII : STX ID(2Byte) RCWT ETX</td><td>HEX : 02 30 31 52 43 57 54 03</td></tr>
<tr><td rowspan="2">Response</td><td colspan="2">STX ID RCWT State1(2byte) State2(2byte) Sign+/-(1byte) Current Weight (7byte) Unit (2byte) ETX</td></tr>
<tr><td colspan="2">State1 : OL(Overweight), ST(Steady), US(Unsteady)
State2 : NT(Net Weight), GS(Gross Weight)</td></tr>
<tr><td colspan="3">Ex)Steady, Not using Tare, Current Weight : 3.000kg
STX ID R C W T S T , N T , + 0
02h 30h 31h 52h 43h 57h 54h 53h 54h 2Ch 4Eh 54h 2Ch 2Bh 30h
0 3 . 0 0 0 k g ETX
30h 33h 2Eh 30h 30h 30h 6Bh 67h 03h</td></tr>
<tr><td colspan="3">Current Weight
(F305-02 or F312-02)</td></tr>
<tr><td colspan="2">ASCII : STX ID(2byte) RCWT ETX</td><td>HEX : 02 30 31 52 43 57 54 03</td></tr>
<tr><td rowspan="2">Response</td><td colspan="2">STX ID RCWT State1(1byte) State2(1byte) P Decimal Point(1byte) Sign+/-(1byte) Current Weight(7byte) Unit(2byte) ETX</td></tr>
<tr><td colspan="2">State1 : O(Overweight), S(Steady), U(Unsteady)
State2 : N(Net Weight), G(Gross Weight)</td></tr>
<tr><td colspan="3">Ex)Steady, Not using Tare, Current Weight : 0.000kg
STX ID R C W T S N P 3 + 0 0 0
02h 30h 31h 52h 43h 57h 54h 53h 4Eh 50h 33h 2Bh 30h 30h 30h
0 0 0 0 k g ETX
30h 30h 30h 30h 6Bh 67h 03h</td></tr>
</table>

Current Data Value
(F305-00, 01, 03, 04 or F312-00, 01, 03, 04)

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

Response	STX ID RCWD **Date(6byte) Time(6byte) P/N(2byte) Count(6byte) Tare(7Byte) Current Weight (7byte) Unit(2byte)** ETX

Ex) Date : August 12th 2009, Time : 12:00:00, P/N : 15, Count : 10times, Tare : 2.000kg, Current Weight : 3.000kg

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

0	0	0	0	1	5	0	0	0	0	1	0	0	0	2
30h	30h	30h	30h	31h	35h	30h	30h	30h	30h	31h	30h	30h	30h	32h

.	0	0	0	+	0	0	3	.	0	0	0	k	g	ETX
2Eh	30h	30h	30h	2Bh	30h	30h	33h	2Eh	30h	30h	30h	6Bh	67h	03h

Current Data Value
(F305-02 or F312-02)

ASCII : STX ID(2byte) RCWD ETX	**HEX :** 02 30 31 52 43 57 44 03

Response	STX ID RCWD P **Decimal Point(1byte) Date(6byte) Time(6byte) P/N(2byte) Count(6byte) Sign+/-(1byte) Current Tare(7byte) Sign+/-(1byte) Current Weight(7byte) Unit(2byte)** ETX

Ex) Date : January 1st 2014, Time : 12:00:00, P/N : 34, Count : 10 times, Tare : 2.000kg, Current Weight : 3.000kg

STX	ID		R	C	W	D	P	3	1	4	0	1	0	1
02h	30h	31h	52h	43h	57h	44h	50h	33h	31h	34h	30h	31h	30h	31h

1	2	0	0	0	0	3	4	0	0	0	0	1	0	+
31h	32h	30h	30h	30h	30h	33h	34h	30h	30h	30h	30h	31h	30h	2Bh

0	0	0	2	0	0	0	+	0	0	0	3	0	0	0
30h	30h	30h	32h	30h	30h	30h	2Bh	30h	30h	30h	33h	30h	30h	30h

k	g	ETX
6Bh	67h	03h

Sub-total
(F305-00, 01, 03, 04 or F312-00, 01, 03, 04)

ASCII : STX ID(2Byte) RSUB ETX	**HEX :** 02 30 31 52 53 55 42 03
Response	STX ID RSUB **P/N(2byte) Sub-total Count (6byte)** **Sub-total (11byte) Unit(2byte)** ETX

Ex) P/N : 15, Count : 10 times, Sub-total : 10.000KG

STX	ID		R	S	U	B	1	5	0	0	0	0	1	0
02h	30h	31h	52h	53h	55h	42h	31h	35h	30h	30h	30h	30h	31h	30h

0	0	0	0	0	1	0	.	0	0	0	k	g	ETX
30h	30h	30h	30h	30h	31h	30h	2Eh	30h	30h	30h	6Bh	67h	03h

Sub-total
(F305-02 or F312-02)

ASCII : STX ID(2byte) RSUB ETX	**HEX :** 02 30 31 52 53 55 42 03
Response	STX ID RSUB P **Decimal Point (1byte) P/N(2byte) Sub-total Count (6byte)** **Sub-total (10byte) Unit(2byte)** ETX

Ex) Count : 10 times, Sub-total : 10.000Kg (3 Decimal Places)

STX	ID		R	S	U	B	P	3	0	1	0	0	0	0
02h	30h	31h	52h	53h	55h	42h	50h	33h	30h	31h	30h	30h	30h	30h

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

Sub-total Count

ASCII :STX ID(2Byte) RSNO ETX	**HEX :**02 30 31 52 53 4E 4F 03
Response	STX ID RSNO **Sub-total Count (6byte)** ETX

Ex) Sub-total Count : 123

STX	ID		R	S	N	O	0	0	0	1	2	3	ETX
02h	30h	31h	52h	53h	4Eh	4Fh	30h	30h	30h	31h	32h	33h	03h

Total **(F305-00, 01, 03, 04 or F312-00, 01, 03, 04)**	
ASCII : STX ID(2Byte) RGRD ETX	**HEX :** 02 30 31 52 47 52 44 03
Response	STX ID RGRD **P/N(2byte) Total Count (6byte) Total (11byte) Unit(2byte)** ETX

Ex) P/N : 15, Count : 10 times, Total : 10.000kg

STX	ID		R	G	R	D	1	5	0	0	0	0	1	0
02h	30h	31h	52h	47h	52h	44h	31h	35h	30h	30h	30h	30h	31h	30h

0	0	0	0	0	1	0	.	0	0	0	k	g	ETX
30h	30h	30h	30h	30h	31h	30h	2Eh	30h	30h	30h	6Bh	67h	03h

Total **(F305-02 or F312-02)**	
ASCII : STX ID(2byte) RGRD ETX	**HEX :** 02 30 31 52 47 52 44 03
Response	STX ID RGRD P **Decimal Point(1byte) Total Count (6byte) Total (10byte) Unit(2byte)** ETX

Ex) Count : 10 Times, Total Weight : 10.000kg

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

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

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

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

Ex) Date : January 1st 2014

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

Tare

(F305-00, 01, 03, 04 / F312-00, 01, 03, 04)

ASCII :STX ID(2Byte) RTAR ETX	**HEX :** 02 30 31 52 54 41 52 03
Response	STX ID RTAR **Tare(7byte)** ETX

Ex) Tare : 2.000kg

STX	ID		R	T	A	R	0	0	2	.	0	0	0	ETX
02h	30h	31h	52h	54h	41h	52h	30h	30h	32h	2Eh	30h	30h	30h	03h

Tare

(F305-02 or F312-02)

ASCII :STX ID(2byte) RTAR ETX	**HEX :** 02 30 31 52 54 41 52 03
Response	STX ID RTAR P **Decimal Point(1byte) Sign+/-(1byte) Tare(7byte)** ETX

Ex) Tare : 2.000kg

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

0	0	ETX
30h	30h	03h

Current P/N Transmission

ASCII : STX ID(2Byte) RPNO ETX	**HEX :** 02 30 31 52 50 4E 4F 03
Response	STX ID RPNO **P/N(2byte)** ETX

Ex) P/N : 01

STX	ID		R	P	N	O	0	1	ETX
02h	30h	31h	52h	50h	4Eh	4Fh	30h	31h	03h

6-1-8. Write Command Details

Zero (Same function as the Zero key)		
ASCII : STX ID(2Byte) WZER ETX		**HEX :** 02 30 31 57 5A 45 52 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	
Tare		
ASCII : STX ID(2Byte) WTAR ETX		**HEX :** 02 30 31 57 54 41 52 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	
Tare Reset		
ASCII : STX ID(2Byte) WTRS ETX		**HEX :** 02 30 31 57 54 52 53 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	
Hold (F305-02 or F312-02)		
ASCII : STX ID(2byte) WHOL ETX		**HEX :** 02 30 31 57 48 4F 4C 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	
Hold Reset (F305-02 or F312-02)		
ASCII : STX ID(2byte) WHRS ETX		**HEX :** 02 30 31 57 48 52 53 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	
Print **(Print data by the port set as print mode. (F303,310 -02)**		
ASCII : STX ID(2Byte) WPRT ETX		**HEX :** 02 30 31 57 50 52 54 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	
Print Sub-total **(Print data by the port set as print mode. (F303,310 -02)**		
ASCII : STX ID(2Byte) WSPR ETX		**HEX :** 02 30 31 57 53 50 52 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	
Print Total **(Print data by the port set as print mode. (F303,310 -02)**		
ASCII : STX ID(2Byte) WGPR ETX		**HEX :** 02 30 31 57 47 50 52 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	
Delete Sub-total		
ASCII : STX ID(2Byte) WSTC ETX		**HEX :** 02 30 31 57 53 54 43 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	
Delete Total		
ASCII : STX ID(2Byte) WGTC ETX		**HEX :** 02 30 31 57 47 54 43 03
Response	Normal : STX ID ACK ETX Error : STX ID NAK ETX	

Time
ASCII : STX ID(2Byte) WTIM Time (6byte) ETX
Ex)12:00:00 **STX ID W T I M 1 2 0 0 0 0 ETX** **02h 30h 31h 57h 54h 49h 4Dh 31h 32h 30h 30h 30h 30h 03h**
Response Normal : STX ID ACK ETX Error : STX ID NAK ETX
Date
ASCII : STX ID(2Byte) WDAT Date(6byte) ETX
Ex) January 2nd 2014 **STX ID W D A T 1 4 0 1 0 2 ETX** **02h 30h 31h 57h 44h 41h 54h 31h 34h 30h 31h 30h 32h 03h**
Response Normal : STX ID ACK ETX Error : STX ID NAK ETX
P/N
ASCII : STX ID(2Byte) WPNO P/N(2byte) ETX
Ex) Change P/N to 17 **STX ID W P N O 1 7 ETX** **02h 30h 31h 57h 50h 4Eh 4Fh 31h 37h 03h**
Response Normal : STX ID ACK ETX Error : STX ID NAK ETX

Tip

How to Calculate Check Sum

Sum the value from "STX" to "ETX" and converts to ASCII(2byte) and transfer.

Convert the Sum value(HEX) to ASCII and transmit(28byte) .

ex) The sum of HEX value from STX to ETX(02,30,31,52,43,57,54,03)is 1A6h.

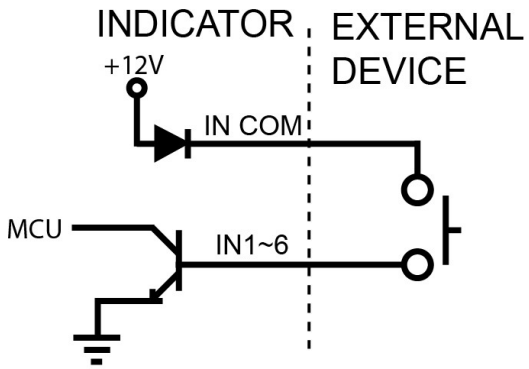
Then, divide 1A6h by100h(1A6h/100h). the rest of result is A6h.

Calculated remainder value is A6h, then convertA6hto ASCII, 41(A), 36(6), and transfer

6-2. External Input

You can set each function of external Input through Function number 233~238.

6-2-1. External Input configuration



6-2-2. External Input connector connection

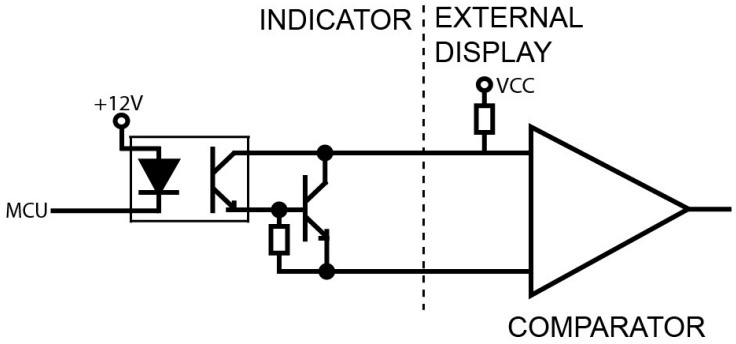
TERMINAL	I1	I2	I3	I4	I5	I6	IC
INPUT	IN1	IN2	IN3	IN4	IN5	IN6	IN COM

6-3. Current loop

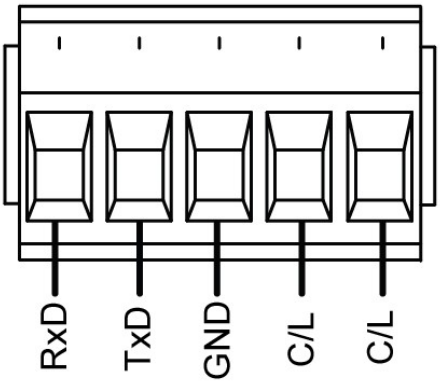
Current loop is suitable for middle distance transmission since it is stronger than RS-232C against electric noise. (About 100M)

Tip **Maximum communication speed is 9,600.**

6-3-1. Current loop circuit composition



6-3-2. Connection



RxD	TxD	GND	C/L	C/L
RS232	RS232	RS232	TxD	TxD

6-4. Analog Output (4~20mA)

Analog Output Interface (4~20mA) is a function to send weight data to external equipment which is adjusted by analog signal (Recorder, P.L.C and so on).

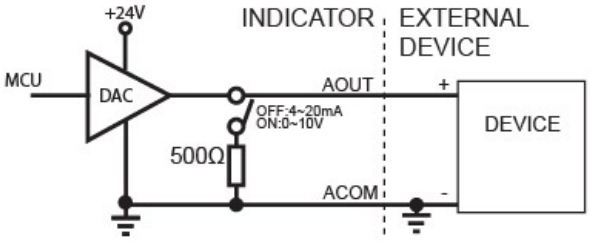
6-4-1. Specification

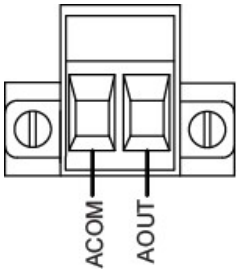
Current Output	Accuracy	Temperature Coefficient	Maximum load impedance
0mA ~ 24mA	1/5,000	0.01%℃	500Ω MAX.

Tip **Analog Output does not work during Calibration or "CELL-Err". When it stops, final output value remains. Please note that it is not suitable for system demanding high accuracy over 1/5,000.**

6-4-2. Circuit Composition and Connection

Current Output (Analog Electric Current, 4~20mA) is commensurate with the Weight Display Signal Input.





ACOM	AOUT
-	+

6-4-3. Output Adjustment

(1) The product is initially supposed to output 0mA when the weight is 0, and 24mA when the weight is maximum.

(2) User have to adjust analog output using Digital Multi-meter depending the environment.

(3) How to adjust analog output

1) Connect Digital Multi-Meter to Indicator (A Out Terminal).

2) Enter **HF30** "**I out(4-20mA) / V out(0-10V) Minimum Output**".

3) Adjust and save the set number of Indicator to let digital multi-meter show minimum output. (When the set value is 04.00, the output would be about 4mA.)

4) Enter **HF31 "I out(4-20mA) / V out (0-10V) Maximum Output".**

5) Adjust and save the set number of Indicator to let digital multi-meter show minimum output. (When the set value is -4.00, the output would be about 20mA)

6-5. Analog Output (0~10V)

Analog Output Interface (0~10V) is a function to send weight data to external equipment which is adjusted by analog signal (Recorder, P.L.C, ….).

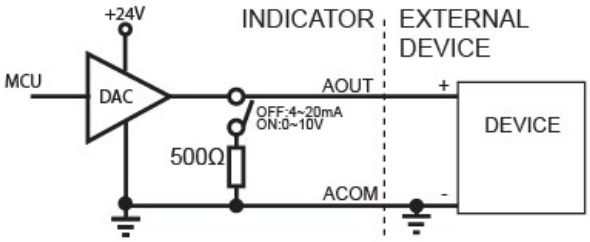
6-5-1. Specification

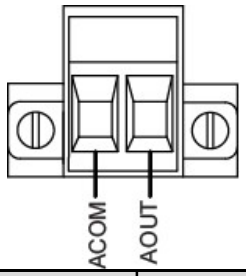
Voltage Output	0~11V DC
Accuracy	1/5,000

Tip **Analog Output does not work during Calibration or "CELL-Err". When it stops, final output value remains. Please note that it is not suitable for system demanding high accuracy over 1/5,000.**

6-5-2. Circuit Composition and Connection

Current Output (Analog Electric Current, 0~10V) is commensurate with the Weight Display Signal Input.





ACOM	AOUT
-	+

6-5-3. Output Adjustment

(1) The product is initially supposed to output 0V when the weight is 0, and 10V when the weight is maximum.

(2) User have to adjust analog output using Digital Multi-meter depending the environment.

(3) How to adjust analog output

1) Connect Digital Multi-Meter to Indicator (A Out Terminal).

2) Enter **HF30** "**I out(4-20mA) / V out(0-10V) Minimum Output**".

3) Adjust and save the set number of Indicator to let digital multi-meter show minimum output. (When the set value is 0.00, the output would be about 0V.)

4) Enter **HF31 "I out(4-20mA) / V out (0-10V) Maximum Output".**.

5) Adjust and save the set number of Indicator to let digital multi-meter show minimum output. (When the set value is 0.00, the output would be about 10V.)

6-6. Analog Output Setting

(1) Adjust output using switch.

(2) Enter "HF29 **I out(4-20mA) / V out(0-10V) Set** ". Select and save the output you want.

6-7. Print Interface

It can be connected with all kinds of Serial interface printer, but the printing format is already programmed and fixed with SE7200/7300 model.

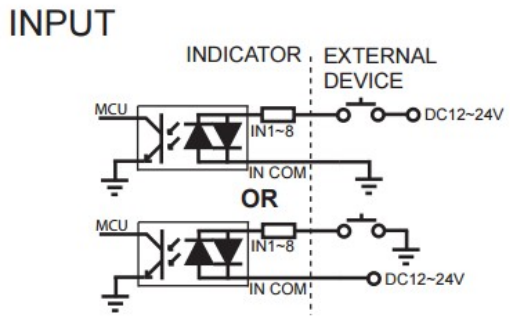
6-7-1. Print Format (Setting F-303 or 310-02)

	Korean(120-00)	English (120-01)
Continuous Print 121-00	========== 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	========== 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
Single Print 121-02	========== 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	========== 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
Grand-total Print	========== 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 ==========	========== 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 ==========

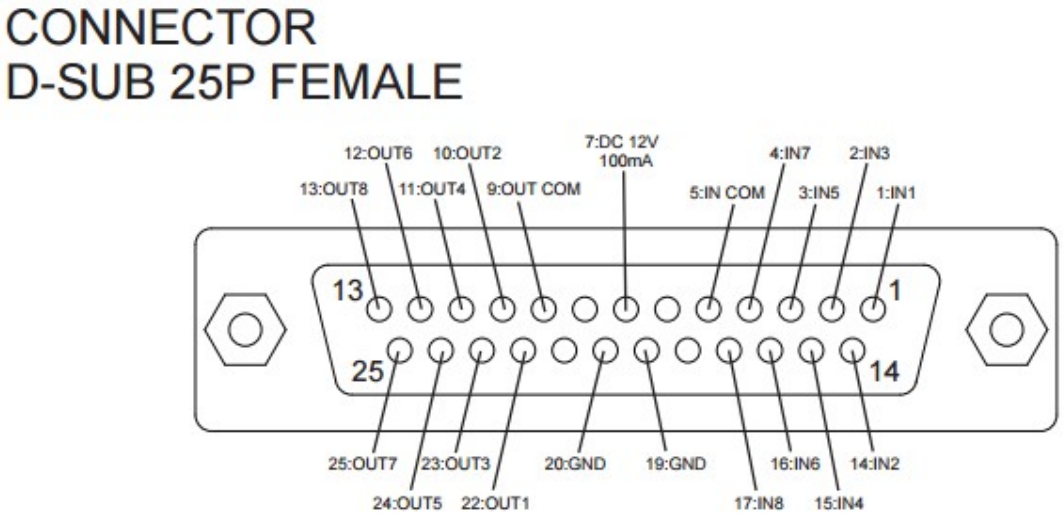
Tip **Date and Time data will be printed in Continuous Print mode such as Single Print Mode, if it is first print out.**

6-8. BCD IN CARD (Changing Product number)

6-8-1. BCD IN card circuit composition



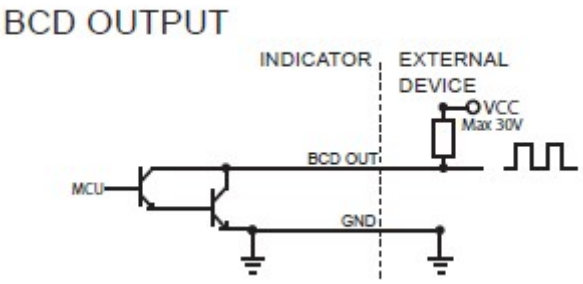
6-8-2. BCD IN card connection



PIN NO.	1	14	2	15	3	16	4	17	5
ROLE	IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN COM
Function 310-01	1	2	4	8	10	20	40	-	-
Function 310-02	1	2	4	8	16	-	-	-	-
Function3 310-03	1	2	3	4	5	6	7	8	-

6-9. BCD OUT (weight data output)

6-9-1. Circuit composition



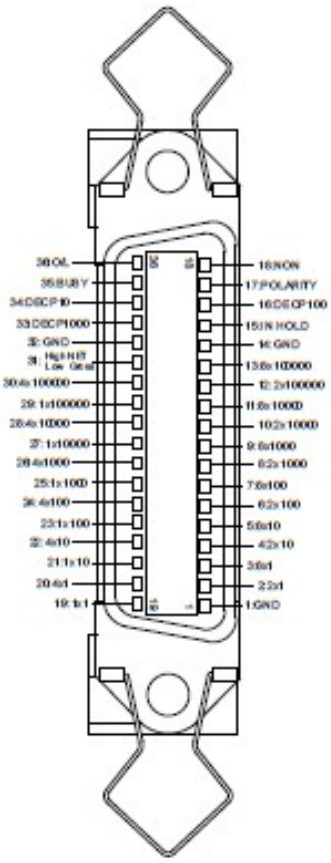
6-9-2. Card switch setting

SWITCH	BASIC	MOTION
NON-INVERT	HIGH	LOW
INVERT	LOW	HIGH

6-9-3. BCD OUT card specification

MAX Input Voltage	30V 500mA

6-9-4. BCD OUT card connection



Role	Pin No.	Role	Pin No.
1X1	19	4X10000	28
2X1	2	8X10000	11
4X1	20	1X100000	29
8X1	3	2X100000	12
1X10	21	4X100000	30
2X10	4	8X100000	13
4X10	22	GND	32
8X10	5	Net-weight (HIGH)	31
1X100	23	Total weight (LOW)	31
2X100	6	GND	1, 14
4X100	24	Disuse	15
8X100	7	Decimal point 0.000	33
1X1000	25	Decimal point 0.00	16
2X1000	8	Decimal point 0.0	34
4X1000	26	Mark (Output : -)	17
8X1000	9	Disuse	35
1X10000	27	Disuse	18
2X10000	10	Overload	36

F309 9 , F310 00 F313 00

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) Change the summing board 2) Check wiring status on Summing board	
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	
"OL" display (Over Load)	1) Load cell broken or Indicator connection Error 2) More loaded than Max Capacity	1) Check Load Cell broken 2) Check Load cell correctly connected 3) Remove the weight over-loaded	In case of more loaded than Max Capacity because of overlapped TARE used, it shows '-OL-'

7-2. Calibration Error

Display	Treatment
Err-04	In case of input more than Max capacity for Standard weight set-up
Err-06	1. Too high value of Amp. Gain 2. Wiring D+/D- connected opposite 3. No weight loaded
Err-08	In case of input the value that is not acceptable in FUNCTION
Err-A	Tough situation of the weight set-up because of unstable value

7-3. Digital Weighing Indicator

Below error table show causing of error and treatment, when weighing process is not working or it cannot measure weighing due to indicator error.

Display	Cause	Treatment
"Settin"	1. It displays "SETTIN" when the indicator is turned on, it is out of order EEPROM.	1. Please contact with your dealer or manufacturer directly.
"Halt"	1. Out of order H/W if "halt" is displayed	1. Please contact with your dealer or manufacturer directly.
"Lt-Err"	1. No connection between load cell and indicator	1. Check the D+/D- cable connection.

※ Under **"Lt-Err"**, Zero key, Tare key, print key, and analog output(4-20mA/0-10V) will not be activated.

WARRANTEE CETIFICATION

This product is passed "Curiotec Co.,Ltd.'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 Curiotec Co.,Ltd.'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

Manufacturer
CURIOTEC Co.,Ltd.
#79, Myeongbongsan ro 352 beon-gil, Goangtan-mueon, Paju-si, Gyeonggi-Do, South KOREA, 413-855
Website : http://www.curiotec.com
Email : curiotec@curiotec.com
Made in KOREA

Product	Digital Weighing Indicator
Model	CTI 400D
Serial No.	
AUTHORIZED STAMP	