

BONGSHIN[®]



OPERATIONAL MANUAL



BS-8350

DIGITAL INDICATOR

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1. INTRODUCTION

Thank you very much for your purchasing BONGSHIN Digital Weighing Indicator of **BS-8350**.

This Instruction Manual will lead you to use **BS-8350** with top reliability, High speed, high accuracy.

BS-8350 is Digital Weighing Indicator amplifying the analog output from a load Cell, converting the analog signal to digital data and then displaying this data

As a weight reading and is designed for flawless performance in your demanding

Application of input-weighing, output-weighing, accumulating-weighing, 2step control.

Also, an additional option will make Modern Industry demand equipment that both versatile

And availed to easily connect to other devices

※ Example for application :

1. PACKING EQUIPMENTS FOR MANUAL WEIGHING
2. EQUIPMENTS FOR AUTO-FILLER WEIGHING
3. EQUIPMENTS FOR OUTPUT WEIGHING
4. EQUIPMNETS FOR ACCURACY WEIGHING
5. RECORD-MANAGEMENT FOR PRODUCT WEIGHT

↳ REMARK

- Specification subject to change for improvement without prior notice.
- If changing, the Version No can be increased, but keeps a former version

As far as possible

2. SAFTY CONDITIONS

Please keep the following **using conditions certainly**

■ EARTH

To avoid an electric error such as a noises in your production line It should be earthed before installation certainly.

Specially it will be safety to divide the power of Indicator into a load cell.

■ SAFTY CONDITIONS

Don't use it closed to a explosive gas and an inflammable dust environments

■ POWER

Use the power under 110/220V 50/60HZ $\pm 10\%$ and divide it into the power line

■ TEMPERTURE CONDITIONS

Operating Temperature : $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ ($+14^{\circ}$ to 104°F)

Custody Temperature : $-40^{\circ}\text{C} \sim +80^{\circ}\text{C}$ (-40° to 176°F)

■ INSTALLATION LOAD CELL

- Available to use the same load cell of 6pcs (350Ω standard)
- A ground should be installed horizontal
- Installing over 2pcs of load cell, please connect each line in parallel and Insert a variable resistor under 50Ω in EX + line and minimize a output Accuracy of load cell.
It may occur a weight error by each accuracy of load cell.
- It may occur a weight error in case of a temperature variation of load cell
 - Please weld(elect spark) at the place installed with load cell and equipments,
Divide the power into a connector of load cell in inevitable case
 - Please connect the below construction of load cell with the above ones using
The earth to the weighing part weighing a material occurring a electro sparks.

3. Features

- A compact Appearance by DIN regulations (DIN 193 x 96 Panel system)
- Easy to preset, change, confirm the weight value by the numeral key.
- Improved a convenience and precision of operating with Message Function.
- Can use or disuse each key function. (SETUP Reference)
- Weight Memory function even in electro spark case.
- Watch-Dog timer guards for self-diagnostics.
- Set up to 1/20,000 display resolution
- Function available to change the unit value such as g, kg, ton.
(In case of Serial Communication & Printer)
- Various specification of weight conversion speed.
(Digital Filter Function)
- Various option and addition for customer's satisfaction such as serial communication, RS-422, Printer, BCD Input and so on.

TECHNICAL SPECIFICATION

1. Analog Input & A/D Conversion

Load cell excitation Voltage	DC 10V \pm 5%, 300mA up to 8 x 350ohm load cells
Input sensitivity	0.3 μ V/D
System linearity	Within 0.01% F.S.
Zero adjust range	-1mV \sim +34mV
Input Voltage	Max. 34mV Min. 5mV
Accuracy	Zero drift : \pm 0.2 μ V/ $^{\circ}$ C RTI max. Span drift : 20ppm/ $^{\circ}$ C max.
Input Noise	\pm 0.3 μ V p.p or less
Input Impedance	10 M Ω (Min.)
A/D converter	Sigma-Delta system
A/D internal resolution	Approximately 200,000 counts
A/D external resolution	1/20,000 (Max.)
A/D conversion speed	50 times/sec
Max. resolution	1/20,000

2. Digital Part

Display	7 Segment LED, 6-Digits, 14.1mm(Height)
Display below zero	"-" minus signal
Additional symbols	Zero, Stable, Gross, SP1, SP2, AUTO, RUN, UNDER, OVER
Min. Division	x1, x2, x5, x10, x20, x50, x100
Decimal Point	0, 0.0, 0.00, 0.000, 0.0000

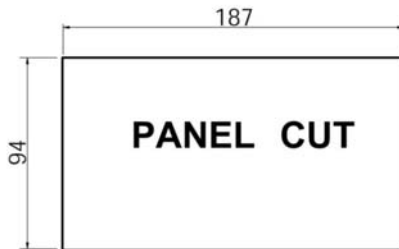
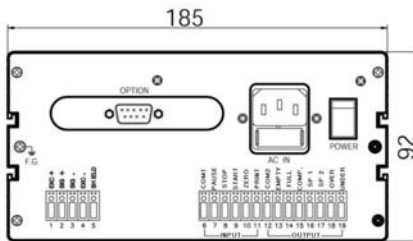
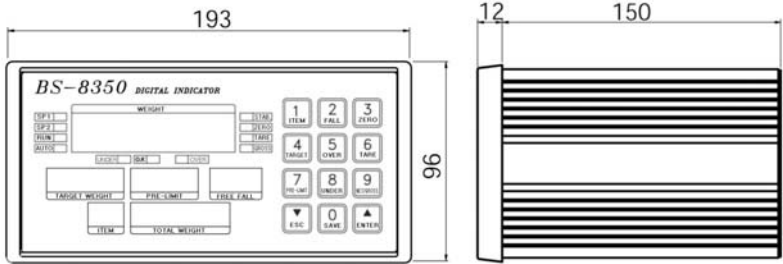
3. Technical

AC adapter	AC 110/220V \pm 10%, 50/60Hz
Power consumption	30 VA
Data Memory	10 year
Operating temperature	-10°C~+40°C (+14°F ~ +104°F)
Humidity	85% Rh Max.
Overall dimensions	193(W) x 162(D) x 96(H)
Weight	2.5 kg

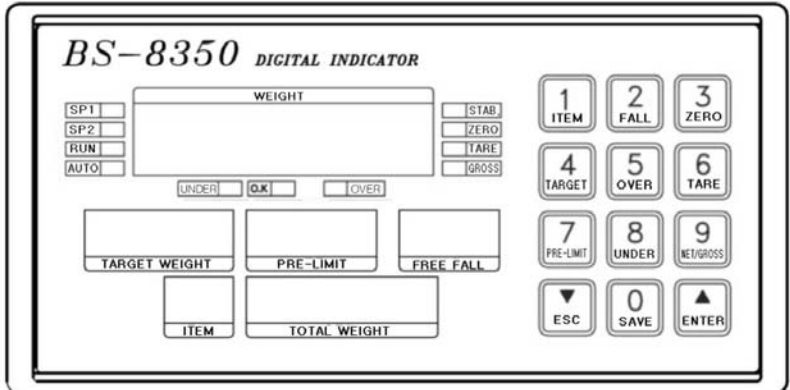
4. Option

Option - 1	Serial Interface : RS-232C
Option - 2	Serial Interface : RS-422
Option - 3	Parallel Interface : BCD INPUT

DIMENSIONS



Front Panel



1. Display Lamp ()

- SP 1 Lamp** : : It will lamp when 1step(90%) control works
- SP 2 Lamp** : : It will lamp when 2step(100%) control works
- RUN Lamp** : ON when the weighing is run.
- STABLE Lamp** : ON when the weight is stable.
- ZERO lamp** : ON when the current weight is 0 kg.
- TARE Lamp** : ON when the tare weight is stored.
This Lamp will be switched to Net mode
- GROSS Lamp** : ON when the current weight is GROSS weight.
When presetting a TARE, It will be a Lamp Function.
- UNDER Lamp** :
- O.K Lamp** :
- OVER Lamp** :

2. Keyboard

* The Key operating can be permitted or prohibited by SETUP-F10

* When pushing the key, it sounds "OK".

* Each Key works either a single function or compound functions.

A compound function key will be a command key when it push first and According to the command key, the fixed value works its function,

The key to finish a input data is **ENTER Key**.



ITEM Key : Usable to confirm or change the product part

- * Can set up the data of each product from 1 No to 50 No.
- Confirmation ITEM : ITEM Key → ESC Key
- Changing ITEM : ITEM Key → Numeral Key →ENTER key



FALL Key : Set Point 2(100%) weight.

- Confirmation FALL : FALL Key → ESC Key
- Changing FALL : FALL Key → Numeral Key →ENTER key



ZERO Key : This key returns the display to the center of ZERO when the weighing device is empty

- Changing ZERO : ZERO Key →ENTER key



TARGET Key : Usable to confirm or change the target weight.

- Confirmation TARGET : TARGET Key → ESC Key
- Changing TARGET : TARGET Key → Numeral Key →ENTER key



OVER Key : OVER weight.

- Confirmation OVER : OVER Key → ESC Key
- Changing OVER : OVER Key → Numeral Key →ENTER key



TARE Key

1. Set-up of TARE Key
 - ① Put a TARE on the weighing plate
 - ② TARE Key → SET Key
2. Remove of TARE Key
 - ① Remove TARE on the weighing plate
 - ② Push TARE Key and push ENTER Key.



PRE-LIMIT Key : Set Point 1(90%)weight.

- Confirmation PRE-LIMIT : PRE-LIMIT Key → ESC Key
- Changing PRE-LIMIT : PRE-LIMIT Key → Numeral Key →ENTER key



UNDER Key : UNDER weight.

- Confirmation UNDER : UNDER Key → ESC Key
- Changing UNDER : UNDER Key → Numeral Key →ENTER key



NET/GROSS Key

After setting TARE, Net Weight converts Gross weight,
or Gross weight converts Net Weight

* Available to convert setting TARE only.



SAVE Key

When recording each sated data
SAVE Key →ENTER key



ESC Key

This have 2way to use as follows .

- 1) When canceling it with input the setting value
- 2) Change the set Point 2 value

Decrease the first place value to 1.



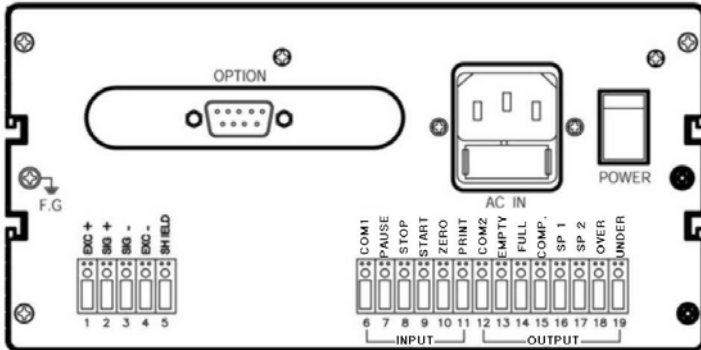
ENTER Key

This have 2way to use as follows .

- 1) When canceling it with input the setting value
- 2) Change the set Point 2 value

Increases the first place value to 1.

Rear Panel



- **POWER** : Power ON, OFF switch

It will be safe to use it after 10minuate for a precise measurements.

- **AC IN** : Available to change AC110/220V with multiple.

Before setting up, please confirm the power voltage.

Please change the connect terminal of 110V/220V after opening the cover

If you need to change. (It was settled with AC220V at the first)

Use a stable power supply AC110/220V $\pm 10\%$, 50/60Hz

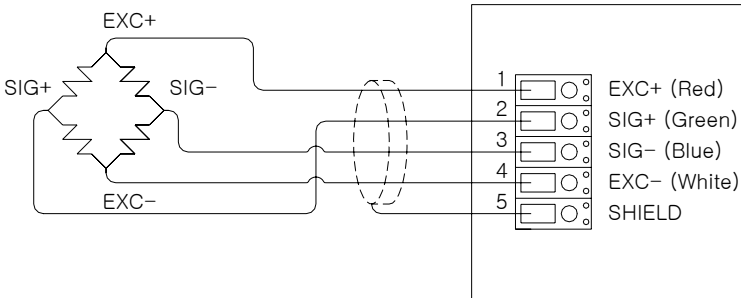
- **FUSE** : please use the standard approved .

FUSE AC250V, 0.5A (a glass tube with small type)

- **F.G** : Please earth it for safe.

- **LOAD CELL** Please connect the indicator connector with the wire of load cell according to the color.

Pin no.	SIGNAL	
1	Load cell Input Voltage (+)	EXC+ (Red)
2	Load cell output (+)	SIG+ (Green)
3	Load cell output (-)	SIG- (Blue)
4	Load cell Input Voltage (-)	EXC- (White)
5	Shield	SHIELD



The wire color of load cell according to a manufactures.

	1 EXC+	2 EXC-	3 SIG+	4 SIG-	5 SHIELD
BONGSHIN	RED	WHITE	GREEN	BLUE	SHIELD
CAS, TMI, AND	RED	WHITE	GREEN	BLUE	SHIELD
BLH	GREEN	BLACK	WHITE	RED	YELLOW
INTERFACE	RED	BLACK	GREEN	WHITE	SHIELD
KYOWA	RED	BLACK	GREEN	WHITE	SHIELD
P.T.	RED	BLACK	GREEN	WHITE	SHIELD
SHOWA	RED	BLUE	WHITE	BLACK	SHIELD
SHINKOH	RED	BLACK	GREEN	WHITE	SHIELD
TML	RED	BLACK	WHITE	GREEN	SHIELD
TFAC	RED	BLUE	WHITE	BLACK	YELLOW
HUNTLEIGH	GREEN	BLACK	RED	WHITE	SHIELD

※ Because wire color may be different according to a manufacture and load cell models. Please refer for the data sheet of load cell.

■ **IN-PUT** : COM1, PAUSE, STOP, START, ZERO, PRINT

This key is to control a equipment from the outside .

Please connect between COM terminal and each input terminal .
 Because the power of input terminal was connected with 12V voltage
 From the inside.

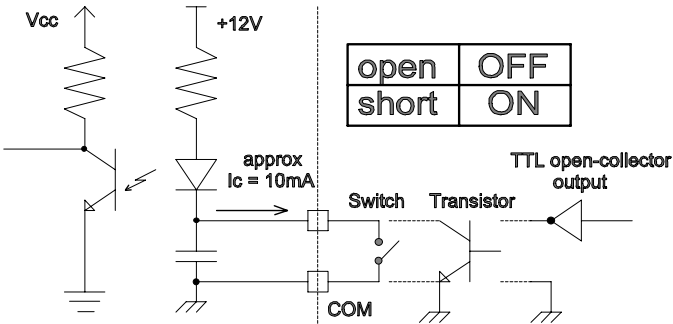
* An electric current is about **10mA**.

* **Please make the minimum time to input a data with over 50mSEC.**

■ **OUT-PUT** : COM2, EMPTY, FULL, COMP, SP 1, SP 2, OVER, UNDER

Connect between COM terminal and OUTPUT terminal
 With the earth of no electric power.

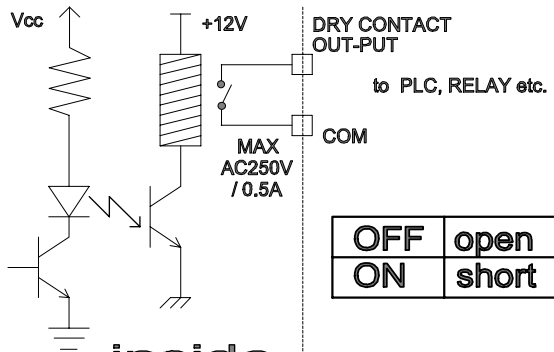
Please use the output data For a signal only, don't use it for working.



open	OFF
short	ON

inside

Max earth capacity : AC250V / 0.5A



OFF	open
ON	short

inside

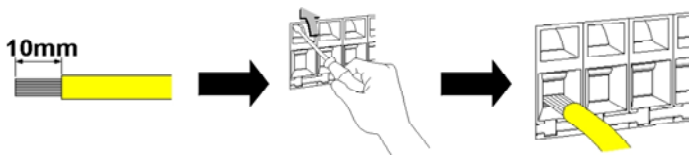
Installation

- Avoid sudden Collision, vibration, temperature, water, wind
- Use a stable power supply 110V/220V \pm 10% 50/60Hz
Set up voltage **220V**
(Adjust the power voltage because the choice terminal of power is inside.)
- Connect and power off the switch when connecting the external equipments.
- Ensure to earth Indicator to equipments
- Ensure to calibrate and set up it for operating.

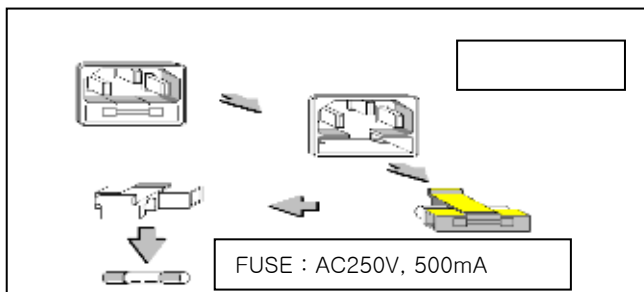
* PARTS

- POWER CODE : 1EA
- FUSE : 1EA (PIPE TYPE 250V 0.5A SMALL TYPE)
- OPERATING MANUAL : 1EA
- A Stable Connector for Option installation.

► TERMINAL BLOCK



► FUSE



Calibration mode

- What is Calibration?

Calibration is to adjust max weight, minimum division, decimal point displayed to Indicator

To the actual weight worked by load cell.

☞ It should calibrated certainly when load cell or indicator will be changed.

1. SPAN ADJUSTMENT

▣ what is span adjustment.

Span adjustment is to make the display value from "0" to max weight consistent to the actual weight.

1-1 How to access the SPAN ADJUSTMENT

Turn on the power while pushing




Key then, the display will

be "SEt. CAL."

Also, pushing ENTER KEY on the below right. it will be displayed with "d xx"
("xx" means 1, 2, 5, 10, 20, 50, 100)

예) POWER OFF CONDITIONS

1. While pushing  Key ----- Display is "SEt. CAL."
2. Pushing ENTER key ----- Display is "d 2"

☞ "SEt. CAL." means SETUP & CALIBRATION mode

1-2 Available Keys

S&C MODE have 6way to adjust span. each step will be advanced with ENTER key. Also, ESC key was used to return the prior conditions.

- ※ F.F : ENTER key
- ※ Review : ESC key

1-3 Calibration Menu (CAL 1 ~ CAL 5)

- 1 Step : Maximum Capacity Set
- 2 Step : Minimum Division Set
- 3 Step : Setting Weight in span calibration
- 4 Step : Zero Calibration
- 5 Step : Span Calibration
- 6 Step : END

■ Step 1

– Function : **Minimum Division Set**

Range → 1~ 100

A step to set up a division value.

"d" means "Division" and "xx" means a division capable of displaying.

Also this value will be displayed as 1–2–5–10–20–50–100 by each key.

A step to set up a Decimal point is Function mode.

So, it will be go to the next step recording the position.

Key	Display	Description
"SAVE" key :	SEtCAL	SEt.CAL. condition.
Increase	d 1	1 kg (Decimal point : 0)
"ENTER" key :	d 2	0.01kg (Decimal point: 2)
Store and move Into next menu		

☞ REF 1. The minimum division means the value of one division.

☞ REF 2. External resolution is obtained by division the min. division by the maximum capacity. Set the resolution to be within 1/30,000.

■ Step 2

– Function : **Maximum Capacity Set**

Range → 1 ~ 99,999kg

A step to set up max. weight.

The display will appear "CAP." (Capacity) and discretion number "C1000.0." (max. 5figure)

It can input the maximum weight as the end-user demands instead of discretion number.

How to input is to push **ENTER** key after inputting discretion number.

- ♣ Don't excess (A division ÷ Max. weight) with over 1/20,000
If accessing over 1/20,000, it will appear "Err 01".

Key	Display	Description
"ENTER" key :	CAP	Step 2 condition.
Store and move	C 100	100 kg
into next menu	C 10000	10000kg

☞ REF 1. The maximum capacity means the maximum weight that scale can measure.

■ Step 3

– Function : **Setting Weight In Span Calibration**

Range → 1 ~ 99,999kg

The display discretion number "L1000.0." (span 5figure)

Please input the value of standard weight for span adjustment by numeric key.

How to input is to push **ENTER** key after inputting discretion number.

This value of span standard weight must be equal to full capacity, or over 10% of full capacity.

(In case of less 1/5,000 resolution ,the value of standard weight

must be over 10% of full capacity at least.)

(In case of over 1/5,000 resolution ,the value of standard weight must be over 20% of full capacity at least.)

(Notice) If span capacity is set less 10% , indicator will display error message.

Key	Display	Description
<p>“ENTER” key :</p> <p>Store and move into next menu</p>	<p>The display shows two lines of text. The first line shows 'L' followed by '100'. The second line shows 'L' followed by '10000'.</p>	<p>Step 3</p> <p>100 kg</p> <p>10000kg</p> <p>Setting Weight</p>

☞ REF 1. The weight shall be within the range of 10%~100% of maximum weight.

☞ REF 2. The setting weight must be over the range of 10% of maximum weight.

☞ REF 3. The setting weight over the maximum capacity.

■ Step 4

– Function : **Zero Calibration**

A step to check the zero conditions of Indicator.

After appearing "UnLoAd", please push **ENTER key**.

Please do it as the zero adjustment instruction.

Key	Display	Description
<p>“ENTER” key :</p> <p>Zero calibration and move into next menu</p>	<p>The display shows three lines of text. The first line shows 'UnLoAd'. The second line shows '000000'. The third line shows 'Good'.</p>	<p>Step 4</p> <p>Unload the tray and press “ENTER” key Under zero calibration</p> <p>Zero calibration is completed.</p>

☞ REF 1. If zero calibration is done without any error, “good” message is

displayed and program moves into Step 5 automatically.

- ☞ REF 2. If the “ZERO” key is pressed, only zero calibration is completed and program moves SAVE & EXIT mode.
please push **ESC key**.


■ Step 5

– Function : **Span Calibration**

Please put the span standard weight on the platform.(the weight is 10000kg at here)

Press **ENTER** key after stable of platform.

(Notice) If indicator is unmatched with load cell capacity or span standard weight, indicator will display error message .

Key	Display	Description
“ENTER” key : Span calibration and move into next menu		Step 5 Load the weight which was set in Step3 and press “ENTER” key. Under span calibration Span calibration is completed. please push ESC key .(Save & exit CAL mode)

- ☞ REF 1. If zero calibration is done without any error, “good” message is displayed the weight of setting weight is displayed on LED screen.
Check the weight.
- ☞ REF 2. Check the weight of setting weight and please push **ESC key** and calibration is completed.

■ Step 6

– Function : **END**

The "END" message is displayed in 6 step,
all span adjustment is end.

Press **ENTER** key after put down of span standard
weight on the platform.

The indicator will enter into user's weighing mode.

Key	Display	Description
<p>"ENTER" key :</p> <p>Store and move into next menu</p>	<p style="text-align: center;">10000</p> <p style="text-align: center;">End</p>	<p>Step 6</p>

REF 1. The maximum capacity means the maximum weight that scale
can measure.

Calibration mode (Simulation weight)

■ What is Simulation Calibration?

Calibration is performed for matching the BS-8350 to a strain-gage sensor. The following two type of calibration are available for the BS-8350.

1. Simulation ADJUSTMENT

■ Equivalent input Calibration.

Calibration is performed without an actual load by entering the rated output value (mV/V) and the capacity (to be indicated) of the strain-gage sensor by the keys. Calibration is easily performed when no actual load is available.


For example, the gain is automatically determined by entering.
2.001mV/V (rated output)-100.0kg (capacity)
as indicated for a load.

1-1 How to access the SPAN ADJUSTMENT

Turn on the power while  pushing Key then, the display will be "Sim. CAL."

Also, pushing ENTER KEY on the below right. it will be displayed with "d xx"
("xx" means 1, 2, 5, 10, 20, 50, 100)

例) POWER OFF CONDITIONS

1. While pushing  Key ----- Display is "Sim. CAL."
2. Pushing ENTER key ----- Display is "d 2"

☞ "Sim. CAL." means SETUP & CALIBRATION mode

1-2 Available Keys

S&C MODE have 6way to adjust span. each step will be advanced with ENTER key. Also, ESC key was used to return the prior conditions.

- ※ F.F : ENTER key
- ※ Review : ESC key

1-3 Calibration Menu (1 Step ~ 5 Step)

- 1 Step : Minimum Division Set
- 2 Step : Maximum Capacity Set
- 3 Step : Rated Output value Set
- 4 Step : Zero Calibration
- 5 Step : END

■ Step 1

– Function : **Minimum Division Set**

Range → 1~ 100

A step to set up a division value.

"d" means "Division" and "xx" means a division capable of displaying.

Also this value will be displayed as 1-2-5-10-20-50-100 by each key.

A step to set up a Decimal point is Function mode.

So, it will be go to the next step recording the position.

Key	Display	Description
"SAVE" key :	5 in.CAL.	Sim.CAL. condition.
Increase	d 1	1 kg (Decimal point : 0)
"ENTER" key :	d 2	0.01kg (Decimal point: 2)
Store and move Into next menu		

☞ REF 1. The minimum division means the value of one division.

☞ REF 2. External resolution is obtained by division the min. division by the maximum capacity. Set the resolution to be within 1/30,000.

■ Step 2

– Function : **Maximum Capacity Set**

Range → 1 ~ 99,999kg

A step to set up max. weight.

The display will appear discretion number "C1000.0." (max. 5figure)

It can input the maximum weight as the end-user demands instead of discretion number.

How to input is to push **ENTER** key after inputting discretion number.

♣ Don't excess (A division ÷ Max. weight) with over 1/20,000

If accessing over 1/20,000, it will appear "Err 01".

Key	Display	Description
"ENTER" key :	C 100	Step 2 100 kg
Store and move into next menu	C 10000	10000kg

REF 1. The maximum capacity means the maximum weight that scale can measure.

■ Step 3

– Function : **Rated Output value Set**

Range → 1.0000 mV/V ~ 3.0000 mV/V

The display discretion number "r2.0000" (rated output 5figure)

Please input the value of standard weight for span adjustment by numeric key.

How to input is to push **ENTER** key after inputting discretion number.

Key	Display	Description
-----	---------	-------------

<p>“ENTER” key :</p> <p>Store and move into next menu</p>		<p>Step 3</p> <p>1mV/V</p> <p>2mV/V</p>
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☞ REF 1. A data sheet is attached to a strain-gauge sensor at the time of purchase.

The data sheet provides data including:

capacity load(in kg, t, etc.)

rated output. Voltage(in mV/V)

non-linearity, Hysteresis, input resistance, output resistance and zero balance.

Enter the capacity and the rated output value required for equivalent input calibration into the BS-8350.

■ Step 4

– Function : **Zero Calibration**

A step to check the zero conditions of Indicator.

After appearing "UnLoAd", please push **ENTER key**.

Please do it as the zero adjustment instruction.

Key	Display	Description
<p>“ENTER” key :</p> <p>Zero calibration and move into next menu</p>		<p>Step 4</p> <p>Unload the tray and press “ENTER” key Under zero calibration</p> <p>Zero calibration is completed.</p>

☞ REF 2. If the “ZERO” key is pressed, only zero calibration is completed and program moves SAVE & EXIT mode.

please push **ESC key**.

■ Step 5

– Function : **END**

The "END" message is displayed in 5 step,
all span adjustment is end.

Press **ENTER** key after put down of span standard
weight on the platform.

The indicator will enter into user's weighing mode.

Key	Display	Description
"ENTER" key : Store and move into next menu	<i>End</i>	Step 5

REF 1. The maximum capacity means the maximum weight that scale
can measure.

SET-UP MODE

1. PREFACE

-- The meaning of " SET-UP " :

is to choose each proper functions for matching the indicator with the appliances of field.

* How to enter into set-up mode

This set-up mode is required for proper weighing operation when indicator connect with other appliance.

You can enter into sep-up mode by below two methods.

- 1) Depress key "2 (TARGET)" first and power on at the same time.
At that time, " F01-xx " word will be displayed on indicator.
Indicator will display to " F01-xx " from above test message.
- 2) If you depress key "2 (TARGET)" for 3 seconds at the normal weighing mode, indicator will also display above.

2. SET-UP

If you depress key "2 (TARGET)" for 3 seconds at the normal weighing mode, indicator will also display above.

F 01 - xx

Each functional setting number

Function number

Abbreviation of function

---Setting method :

- 1) If you proceed to next function, press CLR key or,
If you want to see your desirous any function number,

Press "CLR" key after input any function number by numeric key. Indicator will display function number directly from present function number.

(EXAMPLE)

- * Present display : F01-01
Press CLR key --> "F02-00" display --> Press CLR key.
--> "F03-01" display --> Continuously press CLR key -->
"F04-XX" --> "F05-XX" --> "F06-XX" -->
Press CLR key in streams, the next function number will be displayed.

- * Present display : F01-01
If you want to see function number 12,
Press numeric key "1" and "2" --> Press CLR key -->
"F12-XX" display

- 2) IF you want to change each functional setting number newly,
Press ENTER key after input the functional setting number by numeric key.

(EXAMPLE)

If "F01-01" is changed to "F01-03",
Press ENTER key --> F01-03 display --> Press ENTER key.
A new function number will be memorized.

(Remarks) When you want to change " S & C MODE " from Set-up mode,
Please press key "**2 (TARGET)**" for 3 seconds at the normal weighing mode, indicator will also display above.

3. How to Exit

By pressing "**2 (TARGET)**" for 3 seconds at the normal weighing mode, indicator will also display above.

4. Set Value Conversion Menu (F01~F46)

- F01 **Decimal Point Adjustment**
- F02 **Digital Filter**
- F03 **Automatic Zero Tracking Compensation**
- F04 **Motion Detection Condition**
- F05 **Setting Working Time For Finished Signal Output**
- F06 **Setting Delay Time For Finished Signal Output**
- F07 **Feedback Mode**
- F08 **“TARE” key usage**
- F09 **Weighing Mode**
- F10 **Baud Rate**
- F12 **Output Mode (unit of speed in data transmission)**
- F12 **Printing Format**
- F13 **Device ID**
- F14 **Weighing Unit Change**
- F15 **Print Format**
- F16 **Print Mode**
- F17 **Setting EMPTY Range**
- F18 **Setting FULL Range**
- F19 **Time Change**
- F20 **Date Change**

Decimal Point Adjustment			
F01	0	No decimal point	0
	1	10^1	0.0
	2	10^2	0.00
	3	10^3	0.000
	4	10^4	0.0000

Digital Filter			
F02	1	1 : Less vibration	Adjust the set value according to the condition how many times converted digital value read and display.
	~	~	
	9	9 : Much vibration	

Automatic Zero Tracking Compensation			
F03	00	None automatic zero	Auto-zero tracking will automatically bring the display back to "0" when there are small deviations..
	03	0.5 sec per 1.5 digit	
	23	2.0 sec per 1.5 digit	
	~		
	99	9.0 sec per 4.5 digit	

Motion Detection Condition			
F04	00	No motion Detection Condition	
	03	03 : Less vibration	If weight change within given time is not bigger than the SET range, stable condition is displayed..
	~	~	
	99	99 : Much vibration	

Setting Working Time For Finished Signal Output			
F05	00	00 : Start, stop Relay ON	
	03	03 : 0.3 sec Relay ON	
	~	~	
	99	99 : 9.9 sec Relay ON	

Setting Delay Time For Finished Signal Output			
F06	00	03 : 0.3sec/per 1count	
	~	~	
	99	99 : 9.9sec/per 1count	

Feedback Mode			
F07	0	0 : None Feedback Mode	
	~	3 : 3 time average	
	9	9 : 9 time average	

“TARE” key usage			
F08	0	TARE key	
	1	Print key	

Weighing Mode		
F09	0	Packer Mode
	1	Discharging Mode

Baud Rate		
F10	0	600 bps (bit per second)
	1	1200 bps
	2	2400 bps
	3	4800 bps
	4	9600 bps

Output Mode (unit of speed in data transmission)		
F11	0	No data output
	1	Stream mode
	2	Transmit only in stable condition
	3	Print key mode
	4	Transmit when data is required → Request signal : device ID(F13 : Device ID) → In case F13 : 1, send hex value 01H in computer

PRINTING FORMAT		
F12	0	Data Format (PC)
	1	Printing Format (Korean Language)
	2	Printing Format (English Language)

Device ID			
F13	01	01 : Device ID "1"	It is used the no. of indicator when system is connected.
	~		
	99	99 : Device ID "99"	

Weighing Unit Change			
F14	0	g	gram
	1	kg	kilogram
	2	t	ton

Print Format			
F15	0	Sequence print	
	1	Piece print	

Print Mode			
F16	0	Normal print	
	1	Sub-total Print	
	2	Grand-total Print	

Setting EMPTY Range	
F17	Through Setting EMPTY Range.

Setting FULL Range	
F18	Through Setting FULL Range.

Date Change		
F19	Display	Meaning
	0 2 . 0 5 . 1 8	MAY. 5th, 2002

Time Change		
F20	Display	Meaning
	1 3 . 3 0 . 0 0	01 : 30 : 30 PM

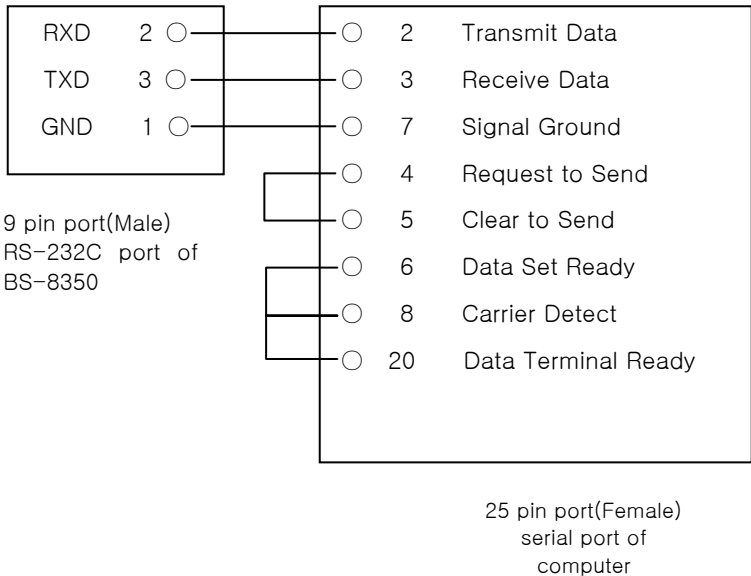
Serial Interface (Option-01)

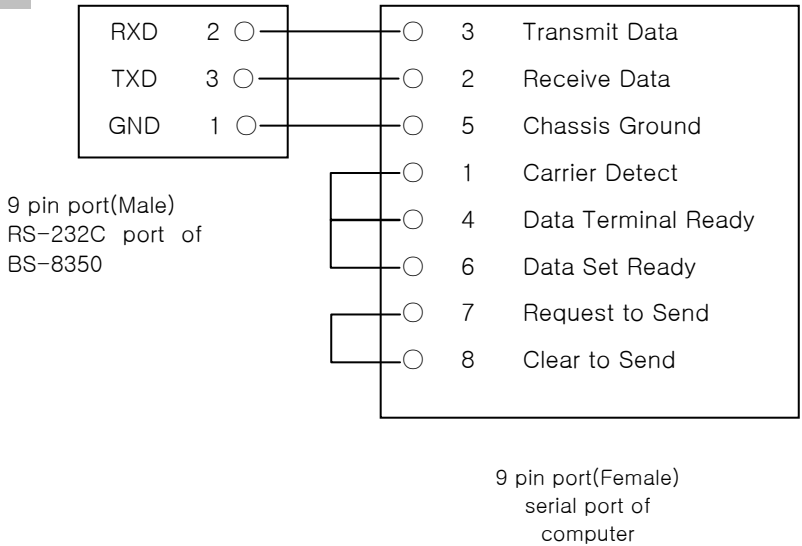
1. RS-232C Serial Interface

► Signal Format

- Type : EIA-RS-232C
- Method : Full-Duplex , Asynchronous, Bi-direction
- Baud rate : 600, 1200, 2400, 4800, 9600bps (Baud-Rate)
- Format :
 - ① Data Bit : 8 (NO Parity)
 - ② Start/Stop : 1 bit
 - ③ Parity Bit : None
 - ④ Code : ASCII

► RS-232C port connection





► Simple Interface Program

■ Basic Program

```

10 OPEN "COM1:9600,N,8,1" As #1
20 IF LOC(1) = 0 THEN 60
30 A$ = INPUT$(1,1)
40 PRINT A$ ; " ";
50 GOTO 20
60 B$=INKEY$ : IF B$ = " " THEN 20
70 PRINT B$ ; " ";
80 PRINT #1,B$;
90 GOTO 20

```

■ C Program

```
#include <bios.h>
#include <conio.h>
#define COM1          0
#define DATA_READY  0x100
#define TRUE          1
#define FALSE         0
#define SETTINGS     0xE3
int main(void)
{
    int in, out, status, DONE = FALSE;
    bioscom(0, SETTINGS, COM1);
    printf("...BIOSCOM [ESC] to exit ...Wn");
    while (!DONE)
    {
        status = bioscom(3, 0, COM1);
        if (status & DATA_READY)
            if ((out = bioscom(2, 0, COM1) & 0x7F) != 0)
                putchar(out);
            if (kbhit())
            {
                if ((in = getch()) == 'Wx1B')
                    DONE = TRUE;
                bioscom(1, in, COM1);
            }
    }
    return 0;
}
```

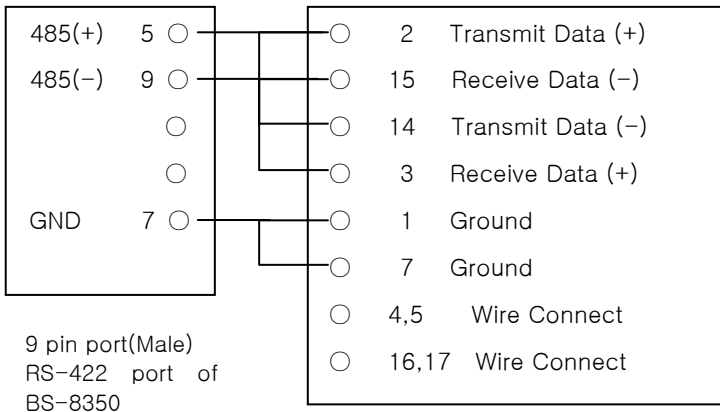
2. RS-422 Serial Interface (Option-02)

- RS-422 is to transmit the signal by the power difference.
Also, it is more safety rather other interface system for a electric noise.
- Specially please use the cable with shield coax cable surely.
- Recommended distance is under 1.2 km.
- Both end side of a wire must be connected by the termination of 300Ω.

▶ **Signal Format** : Same as RS-232C

▶ **Data Format** : Same as RS-232C

▶ **Connecting method of RS-422 port**



25 pin serial port of computer

3. BCD INPUT (Option-03)

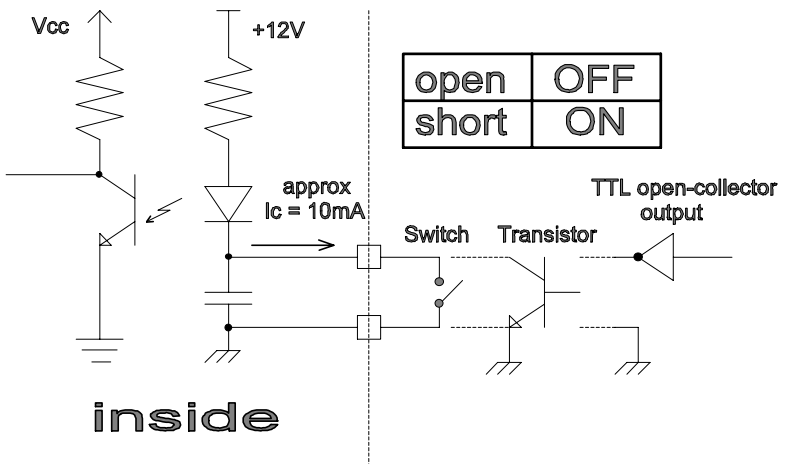
Parallel BCD input is used to change the PART to the external device. This device make it effective to weigh a various works changing the PART with a connection of Computer, PLC, Digital Switch. The inside circuit of Input & Output circuit use a photo-coupler and was isolated from the external

- * Recommend distance is under 10 M
- * BCD code makes a denary into 4figure of a binary number
- * In case PART 19 displayed with BCE CODE such as 0001 10001
0 = OFF, 1 = ON

▣ 9P D-Type Female Connector

PIN NO	SIGNAL
1	COM
2	1×10^0
3	2×10^0
4	4×10^0
5	8×10^0
6	COM
7	1×10^1
8	2×10^1
9	4×10^1

▣ BCD INPUT CIRCUIT



4. PRINTER Format

PRINT SHEET (SEQUENCE)			
DATE :	2003/11/22		
TIME :	12:35:07		
CODE :	10		
PN	SN	D	WEIGHT
1	1	P	49.98 kg
1	2	O	60.00 kg
1	3	P	50.30 kg
1	4	P	52.10 kg
50	5	U	49.00 kg
50	6	U	48.00 kg
50	7	O	62.80 kg
50	8	O	62.10 kg
SUB-TOTAL			
DATE :	2003/11/30		
TIME :	14:50:00		
P.N. :	2		
M.N :	8		
S.T. :	434.28kg		
GRAND-TOTAL			
DATE :	2003/12/01		
TIME :	10:30:28		
PN	SN	WEIGHT	
1	4	212.38kg	
50	50	212.90kg	
T.PN :	2		
T.MN :	8		
T.GT :	434.28kg		

PRINT SHEET (PIECE)			
DATE :	2003/11/22		
TIME :	12:35:07		
CODE :	10		
PN	SN	D	WEIGHT
1	1	P	49.98 kg
SUB-TOTAL			
DATE :	2003/11/22		
TIME :	14:50:10		
CODE :	10		
PN	SN	D	WEIGHT
1	2	O	60.00 kg
GRAND-TOTAL			
DATE :	2003/12/01		
TIME :	10:30:28		
PN	SN	WEIGHT	
1	5	60.00kg	
2	4	60.00kg	
50	50	60.00kg	
PN :	2		
T.MN :	38		
T.GT :	322.20kg		

Set-up for Controlling Weight

Weighing Mode		
F09	0	Packer Mode
	1	Discharging Mode

F09-0 : Sequence 2 step Control 1(Packer Mode)

F09-1 : Output 2step,Input 1step Control

* Sequence 2step Control

The signal of 1Step,2Step will be ON.

Also if the set-up weight was the same or greater, the signal will be OFF

* Output 2step,Input 1step Control

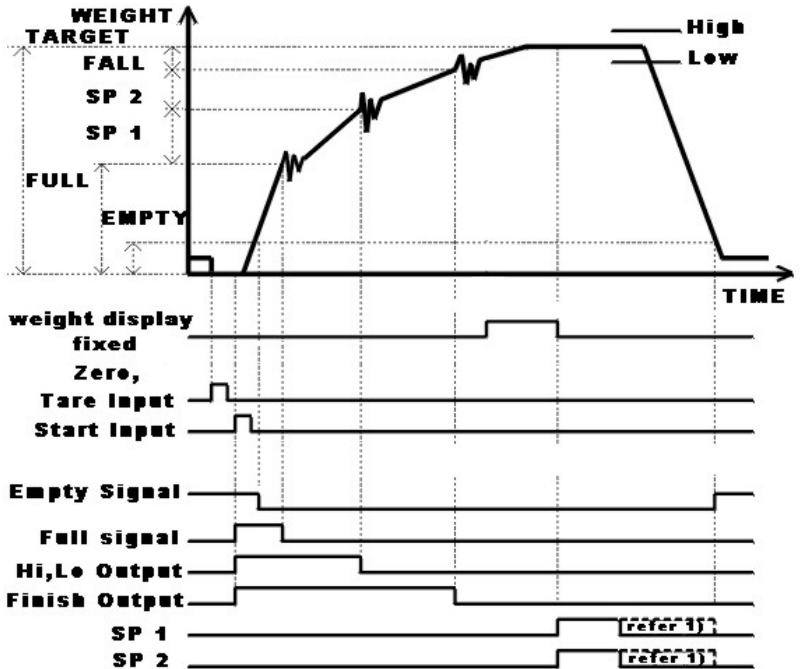
Control Mode for the output only was made with 1 step to input the material weighing

And the 2step of output.

Sequence 2step Control (Packer Mode)

F09-0

Finished Signal &
High, Low Signal

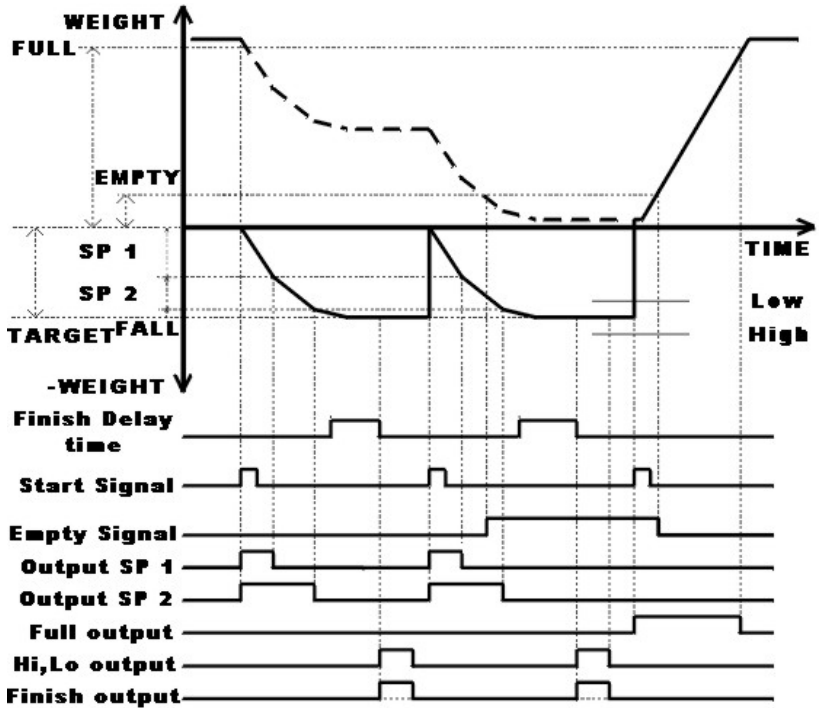


- The basic operating is simple 2step control
 But, High and Low Signal output a signal and have a finished signal
- 1,2 Step Control according to the weight was changed.
 Each weight was setting weight and greater then, it's signal is ON, the except o f it is OFF
- The FALL compensation was available according to FALL set.
- It keeps from the first to the empty range by (1) F05-00 setting.

Sequence 2step Control (Discharging Mode)

F09-1

Finished Signal &
High, Low Signal



- The basic operating is simple 2step control
But, High and Low Signal output a signal and have a finished signal
- 1,2 Step Control according to the weight was changed.
Each weight was setting weight and greater then, it's signal is ON,
the except o f it is OFF
- The FALL compensation was available according to FALL set.
- It keeps from the first to the empty range by (1) F05-00 setting.

Error Message and Trouble Shooting

ERROR	CAUSE	A/S	Reference.
Waving a weight Value.	① Load cell damage ② Insulation resistance badness of load cell. ③ Weighing part error	① Checking for Input, Output of load cell. Resistance Value. ② Checking Insulation Resistance value of Load cell.	① Input resistance : about 420Ω ② Output resistance : about 350Ω ③ Insulation Resistance : over100MΩ
A. Changing a Weight value, B. Not return to ZERO	① Load cell damage.	① Checking Insulation Resistance value of Load cell. (Normal Max 100MΩ or -OL-appear)	
	① Disconnected to Load Cell.	① Confirm a connect of Load cell ② Checking a single wire Of load cell cable	
Weight (-) changed	① Load cell output (SIG+,SIG-)changed.	① Load cell connector	
Appear "Ovr 1" (OVER LOAD)	① Load cell damage ② Connection Error	① Load cell damage ② Load cell connector	
	① Excess Max weight	① Remove excess weight	