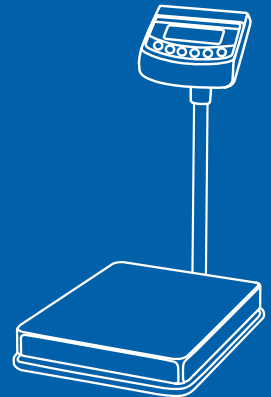


# BW-1N

**Bench Scale**



[www.globalcas.com](http://www.globalcas.com)

**OWNER'S MANUAL**

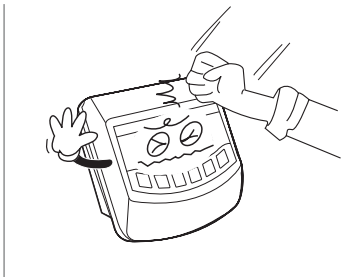
# CAS

## CONTENTS

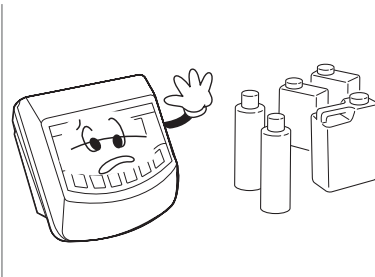
CAUTIONS.....	4
INTRODUCTION .....	6
FEATURES & MAIN FUNCTIONS.....	6
SPECCIFICATION .....	7
PART NAME & KEY FUNCTION .....	8
SYSTEM MODE .....	11
GENERAL FUNCTION & DESCRIPTION ...	16
CONVERSION MODE .....	18
PRINT FORMAT .....	20
RS-232C COMMUNICATION.....	21
USING & BATTERY .....	23
HOW TO INSTALL THE BW .....	25
TEST MODE .....	26
ERROR MESSAGE DESCRIPTION	
& MANAGMENT .....	30

## CAUTIONS

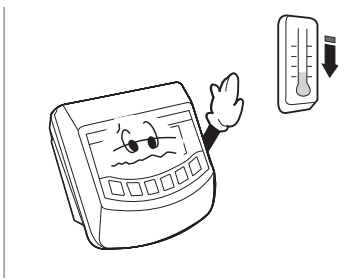
Do not press the key strongly



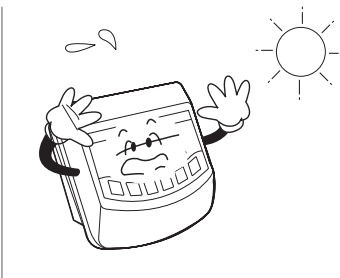
Do not use the inflammable at cleaning



Do not install in the place with sudden temperature change



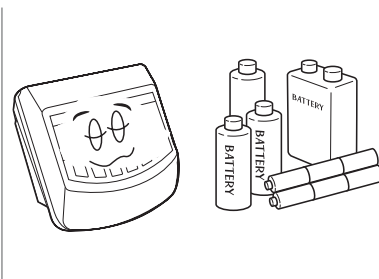
Do not use in the place exposed directly to the sun and including much dust



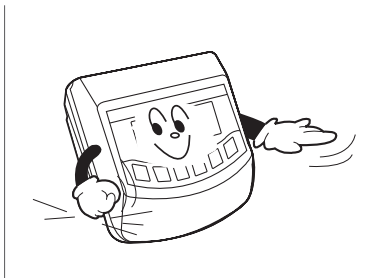
Do not install in the place with excessive electrical noises and shaking



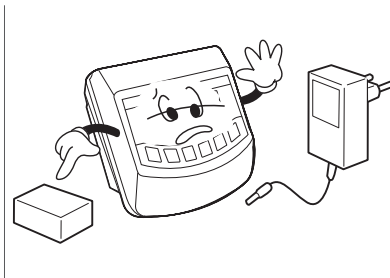
Charge a battery in full to use after negligence for a long time



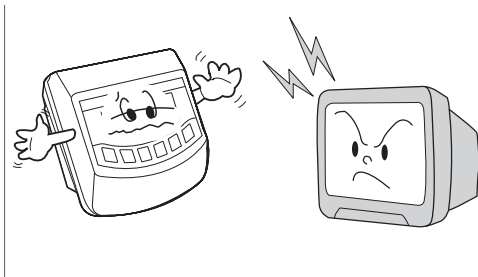
Install the platform on a flat place



Never connect AC adaptor while using the dry battery



Do not install in the place with voltage and terrible electrical noises



## INTRODUCTION

We greatly appreciate for you to purchase **BW** of CAS.

This goods has the excellent performance and splendid properties through strict test under severe quality management.

It is recommended to read this manual in full before using **BW** for good function application.










## FEATURES

- Simple outdoor using in use of battery
- Using general (Mn, Alkaline) battery or rechargeable battery (NiCd)
- Easy operation and various function
- SPACT™ single pass automatic span calibration
- Water proof (IP65)
- High precise resolution
- Liquid crystal display of 6 place weight (LCD)
- Using long-time battery

## MAIN FUNCTIONS

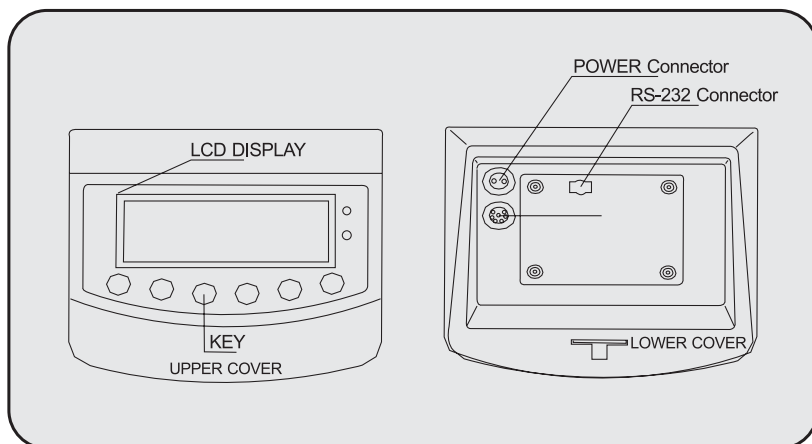
- Hold Function
- COUNT Function (Unit weight setting, unit weight setting by sample)
- Low / High Weight Comparing
- Serial Communication Interface (RS-232)
- Serial Printer Connection
- Self Hardware Test
- Independent Zero Calibration
- Gravity Compensation

# SPECIFICATION

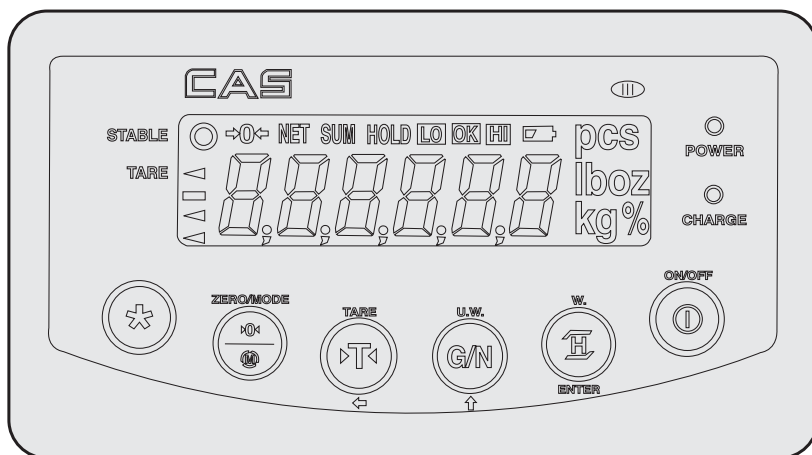
Model Item		BW-1N				
		BW-6	BW-15	BW-30	BW-60	BW-150
Max Capacity		6kg	15kg	30kg	60kg	150kg
Interval		2g	5g	10g	20g	50g
Platter Size		280(W) x 280(D) x 80(H)			405(W) x 525(D) x 105(H)	
Product Size		280(W) x 350(D) x 530(H)			425(W) x 675(D) x 755(H)	
Product Weigh		About 6 kg			About 17 kg	
Charge Time		About 6 hr				
Discharge		About 30 hr (BL ON), About 60 hr (BL OFF).				
Function	General	ON/OFF, Zero, Net, Hold, PCS, RS232, HI, LO, Compare				
	Option	Backlight				
Operatint Temp		-10 ~ +40				
Tare		Max Capacity				
Display		6 Digit LCD(24mm Height) Stable (  ), Zero (  ), Tare (  ), Net (  ),Hold (  ), Low battery (  ), Weight unit (kg), High, OK, Low (  ), (  ), (  ),Count(PCS )				
Power (Option)		1. DC 7.2V(6EA SIZE " AA " ) 2500mAh Rechargeable battery 2. DC 9V(6EA SIZE " C " ) Dry Battery 3. DC 12V 1.25A AC Adaptor				
Power consumption		approx. 0.25W				













# PART NAME & KEY FUNCTION

## 1. Part Name








## 2. DISPLAY





LAMP	SYMBOL	DESCRIPTION
STABLE		ON when current weight is stable
ZERO		ON when current weight is 0
NET		ON at displaying the pure weight
HOLD		ON at weighing the moving object
TARE		ON when tare is activated.
HI		ON when current weight is more than high limit value.
OK		ON when current weight is right weight band.
LOW		ON when current weight is less than low limit value.
BAT		Display the battery recharging time (rechargeable battery) Display the battery replacing time (dry battery) - about 6.9V remain
PCS		ON when current mode is count mode.
CHARGE		When charging battery, charging lamp (RED) is ON. When it is completed, charging lamp (GREEN) is ON.
POWER		ON at connecting the DC 12V adapter.
Minus		ON when weight is “-“
Kg		Weight unit



### 3. KEY Part

KEY	SYMBOL	DESCRIPTION
ON / OFF		Use to power ON / OFF (Press for approx 3 seconds)
ZERO / MODE	 	Use in case of rezero (within 2% of max. capacity), To enter the system mode by pressing for 2 seconds
TARE		Use at weighing in use of TARE Enter the TIME SETTING MODE by pressing for 2 seconds
*		Use to turn ON / OFF Back Light (Option) or to print out in the case that F_2 is set to 4. Enter the CONVERSION MODE by pressing for 2 seconds.

#### ■ Hi/Low Comparing Mode key or Weighing Mode Key

NET / GROSS		Use to display NET weight or GROSS weight. Enter the TEST MODE by pressing for 2 seconds
HOLD		Use to weight the moving object (Manual, Automatic)


#### ■ Counting Mode Key

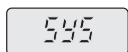
U.W.		Use to display the unit weight (for approx. 5 seconds)
W.		Use to display the current weight (for approx. 5 seconds)

# SYSTEM MODE

- Simple weight mode  
Display the weight after weighing.
- High / Low comparing mode  
Determine that the weight is high, normal or low value and perform the display.
- Count mode  
Display the quantity by setting the unit or sample weight.
- Quantity comparing mode  
Perform the display after discrimination by setting High / Low quantity.

## 1. MODE CONVERSION






- Press Zero-Mode  key for 2~3 sec. to display the following message.



- Execute depending on the below mode conversion and setting method.

## 2. DIGIT INPUT METHOD

Input the digit in use of the below keys.

-  STAR      key : Use to set the input value to
-  G/N      key : Use to increase the first place of value by on.
-  TARE      key : Use to move the current place to the left by one place.
-  ENTER      key : Use to move the current place to the right by one place.
-  MODE      key : Use to complete the input.

Ex) For 20.5 input

	Display	KEY	DESCRIPTION
STEP 1			Press once (Set to "0" )
STEP 2			Press five times.
STEP 3			Press once (Move to the left by one place)
STEP 4			Press once
STEP 5			Press twice times (input 2 as the 3th place value)
STEP 6			Input completion

### 3. SIMPLE WEIGHING MODE CONVERSION

	Display	KEY	PLATFORM	DESCRIPTION
STEP 1				Press once
STEP 2			Empty	Press once. Generally operated

### 4. HIGH / LOW COMPARING MODE CONVERSION

■ In case of no resetting the High / Low value

	Display	KEY	PLATFORM	DESCRIPTION
STEP 1				Press twice
STEP 2			Empty	Press once. Generally operated

■ In case of resetting the High / Low value

	Display	KEY	PLATFORM	DESCRIPTION
STEP 1				Press twice
STEP 1				Press once (Low weight input)
STEP 1		INPUT		Refer to 'Digit input' In page 11
STEP 1				High value input
STEP 1		INPUT		Refer to 'Digit input' In page 11
STEP 1			Empty	Generally operated

## 5. COUNT MODE CONVERSION

■ In case of no setting the unit / sample weight

	Display	KEY	PLATFORM	DESCRIPTION
STEP 1				Press three times
STEP 2			Empty	Press once Generally operated

■ In case of setting the unit weight (Min. range of unit weight ; Min. Division)

	Display	KEY	PLATFORM	DESCRIPTION
STEP 1				Press three times
STEP 2				Press once
STEP 3				Display the set weight
STEP 3	 			Input the unit weight Digit input in page 11
STEP 5				Press 'Mode' key to round & display unit weight. Generally operated

Step 5. Ex) Min. division is 0.1

Input the unit weight as 0.532 and round off the second place of decimal to 0.5

■ In case of setting the unit weight by sample (Samples : 10 - 200 , 10 unit)

	Display	KEY	PLATFORM	DESCRIPTION
STEP 1	Count	↑		Press three times
STEP 2	Unit	M		Press once
STEP 3	SAMPLE	↑		Press once
STEP 4	Pt 10 <sup>PCS</sup>	M		Press once
STEP 5	Pt 50 <sup>PCS</sup>	↑	Empty	Press five times. Simple count input(50pcs)
STEP 6	Load	H	Empty	Press once [ENTER]
STEP 7	Load	H	Sample	Press once with empty [ENTER] key
STEP 8	000532 <sup>kg</sup>	H		Unit weight display. Press once
STEP 9	End			
STEP 10	0 <sup>PCS</sup>		Empty	Generally operated

Note : For setting the unit weight by sample count, the min. unit weight shall be more than min. division

## 6. COUNT COMPARING MODE CONVERSION

### ■ In case of no setting the High / Low quantity

	Display	KEY	PLATFORM	DESCRIPTION
STEP 1				Press four times
STEP 2				Press once. Generally operated

### ■ In case of setting the High / Low quantity

	Display	KEY	PLATFORM	DESCRIPTION
STEP 1				Press four times
STEP 2				Press once. Low value setting
STEP 3				Low value input Digit input in page 11
STEP 4				Press once High value input
STEP 5				High value input Digit input in page 11
STEP 6				Press once. Generally operated

## GENERAL FUNCTION & DESCRIPTION

### 1. REZERO FUNCTION (Use at change zero point)

- Rezero band range : Within 2% of Maximum capacity



Zero point is changed.



Press 'Zero' key. Zero lamp is ON.

### 2. TARE FUNCTION (Use at weighing in use of TARE)

- Maximum TARE range : Maximum capacity



Put the TARE on platform  
(TARE weight : 10kg)



Press 'TARE' key.  
(The TARE weight is saved)



Put the object on platform  
(object weight : 20kg)

Note : The weight including TARE weight can't exceed the maximum capacity

- In case to want know the Gross weight



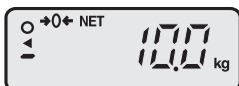
Press 'NET/GROSS' key  
(object + TARE weight display)

- In case to want know the NET weight



Press 'NET/GROSS' key (object weight display)  
Remove the TARE and object from platform to display the saved TARE weight

- In case to remove the Tare weight



Pressing Tare key



Remove the TARE and object from load cell(up figure) and press TARE key(weight is 0)

### 3. HOLD FUNCTION (Use at weighing the moving object)

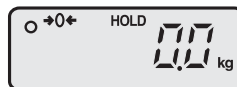
#### ■ Auto hold function (Hold function operated whenever weighing)



Empty the platform



Press 'Hold' key 'Auto hold' message is displayed for 1 sec.



Hold lamp is ON



When the weight change is stable after putting the Object(20kg) on platform, 'Hold' message is displayed



The weight is averaged for approx. 3~5 sec.

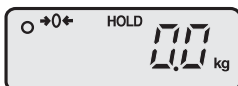


The hold weight is displayed.

Hold start is more than 5.5 division and 10% of maximum capacity after displayed hold weight.

#### ■ To release the hold weight Empty the platform or press 'Hold' key and return to the normal operation

#### ■ Auto hold function release



Empty the platform



Press 'Hold' key  
Auto hold release message is shown for 1 sec.  
And then normally operated. 'Hold' lamp is OFF.

#### ■ Manual hold function (Executed at pressing 'Hold' key)



Put the object (10kg) on platform



Press 'Hold' key.  
'Hold' message is displayed for 1 sec.



The weight is averaged for displayed. 3-5 sec.



The hold weight is displayed. Empty the platform or press 'Hold' key to release the hold weight and perform the normal operation. 'Hold' lamp is OFF

If change weight is more than 10% of maximum capacity after displayed hold weight, hold function is cancelled

# CONVERSION MODE

## 1. ENTER method

If you press the \* key for three seconds to normal operation state, after display "SET" Message for one second and then enter.

## 2. KEY using



Move to the next menu.



Increase the set point.



Return to the normal operation at completion of setting :[ENTER] key.

## 3. CONVERSION menu (F01 - F06)

F - 1 : Auto power OFF setting.

F - 2 : RS-232C communication setting.

F - 3 : Select print format type.

F - 4 : Stable condition

F - 5 : Display Time Control

F - 6 : Hold Time Control

### ■ F - 1 : Auto power OFF setting

Auto power OFF function is used to spare the battery by means of power off when this scale is not used.

Set point		Meaning
F - 1	0	Auto power OFF is not used
F - 1	1~9	Automatically power off when the weight is not change or no key is used for 1 ~ 9 minutes

■ F - 2 : RS-232C communication setting

Set point		Meaning
F - 2	0	No transmit
F - 2	1	-
F - 2	2	Transmit at stable weight
F - 2	3	Transmit at data request. (Data request signal "D")
F - 2	4	Use for print mode

■ F - 3 : Select print format type

Set point		Meaning
F - 2	0	Select print format 1
F - 2	1	Select print format 2
F - 2	2	Select print format 1 + Current Time
F - 2	3	Select print format 2 + Current Time

■ F - 4 : Stable Condition

Set point		Meaning
F - 4	1~9	Stable level 1~ 9

■ F - 5 : Display Time Control

Set point		Meaning
F - 5	1~9	Display Time Control (1 : Past, 9 : Slow)

■ F - 6 : Hold Time Control

Set point		Meaning
F - 6	1~7	Hold Time Control (1 : Past, 7 : Slow)

## Print Format

### Weight Mode

#### < Format 1 >

No. 001 : 1.00 kg

#### < Format 2 >

001 : Net 1.00 kg

Tare 0.00 kg

Gross 1.00 kg

#### < Format 1 + Time >

2005 03. 17 11:23:46

No. 001 : 1.00 kg

Printed weight is net weight.

#### < Format 2 + Time >

2005 03. 17 11:23:46

001 : Net 1.00 kg

Tare 0.00 kg

Gross 1.00 kg

### PCS Mode

#### < Format 1 >

No. 001 : 1.00 pcs

#### < Format 2 >

001 : Net 1.00 pcs

Tare 0.00 pcs

Gross 1.00 pcs

#### < Format 1 + Time >

2005 03. 17 11:23:46.

No. 001 : 1.00 pcs

Printed count is net count.

#### < Format 2 + Time >

2005 03. 17 11:23:46

001 : Net 1.00 pcs

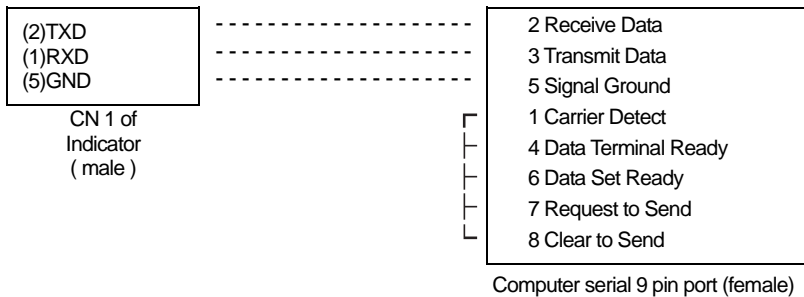
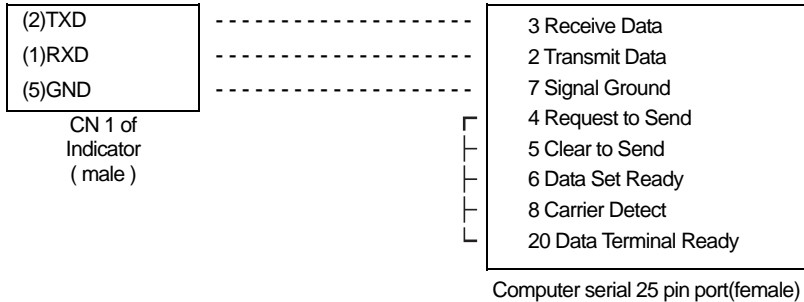
Tare 0.00 pcs

Gross 1.00 pcs

# RS-232C communication

## 1. Port connection method

Connect the computer serial port with RS-232C port in the back panel of indicator as follows to communicate with computer



## 2. RS-232C Output data format

- Baud rate : 9600bps
- Data bit : 8, Stop bit : 1, Parity bit : None
- Code : ASCII

Total 22 Bytes

		,		,						Data(8 bytes)		K	G	CR	LF
--	--	---	--	---	--	--	--	--	--	---------------	--	---	---	----	----

US (Unstable)	GS(Gross W.)	SOH Lamp Status	em Pty	
ST (Stable)	NT(Net W.)	Byte		Weight
OL (Overload)				Unit

■ **Lamp status byte** : Display the current state (ON/OFF)of indicator lamp (Low Enable)

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	STABLE	HIGH	LOW	HOLD	GROSS	TARE	ZERO

■ **Data (8 bytes)**

Weight data including a decimal point “ - ” and . That is, for -13.5kg:

Transmit ASCII code 8 bytes



Corresponding to “-”, “”, “”, “”, “1”, “3”, “5”,

### ■ Data request mode

If F\_2 is set to 3, the indicator outputs the specified data when ASCII code corresponding to “D” is sent to it.

# BATTERY

## 1. Battery replacement or charging time

- Power is off in a specific time after  lamp is on in the right top of display part.  
The battery lamp is on when the amount of battery is about 6.9 V and power is off  
When the amount of battery is about 6.5V automatically.
- When the  lamp is on, replace the dry or charge the rechargeable battery.

## 2. General (Mn, Alkaline) battery using and replacing

- Open the top cover and make as follows in the left bottom of cover at using the general (Mn, Alkaline) battery.
- Insert the battery into the battery case after checking the battery polarity.

### Warning

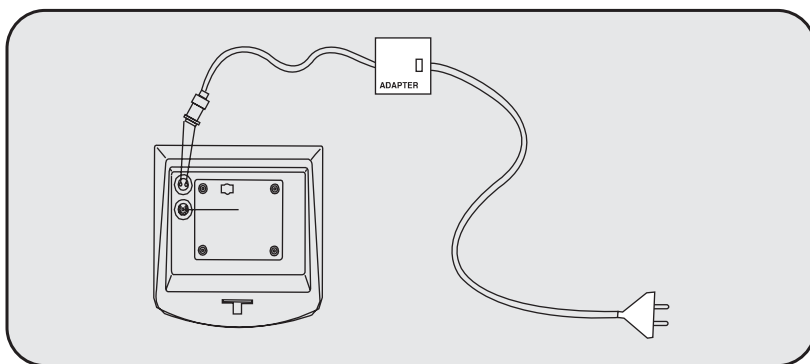
Open the cover and check the battery type.

If the battery is not the rechargeable battery (this is : Mn, Alkaline),

Never connect the AC adaptor jack in the back panel

### 3. Rechargeable battery using and recharging

- Open the top cover and make as follows in the left bottom of cover at using the rechargeable battery.
- Open the jack protecting cap in the back panel and connect the adapter as follows.
- When the adapter is connected with indicator, RED(POWER) and RED(CHARGE) lamp are ON.
- When the charging is completed, CHARGE lamp is changed to GREEN.
- It takes approximately 4-5 hours to charge in full.

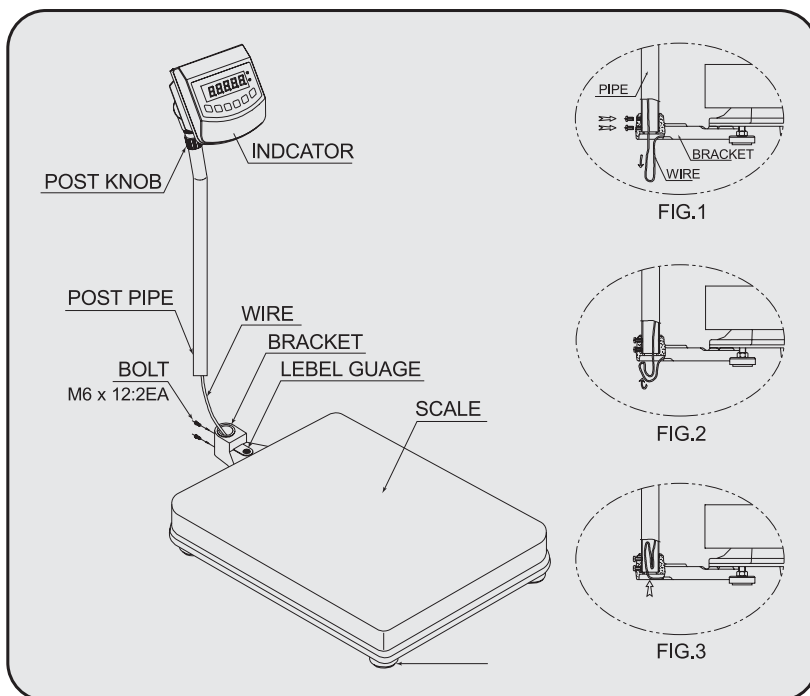


### 4. Battery using period

Conditions	Using Period
BACK LIGHT(E.L) is not used	Recharging Battery : Approx. 70 hours Mn Battery : Approx. 100 hours Alkaline Battery : Approx. 250 hours
BACK LIGHT(E.L) is always used	Recharging Battery : Approx. 30 hours Mn Battery : Approx. 45 hours Alkaline Battery : Approx. 90 hours

Battery using time can change according to battery using period or loadcell number.

## HOW TO INSTALL THE BW



1. Open the box with care because indicator is connected to the scale with load cell wire.
2. Turn the post knob so as to fix indicator.
3. Pull down the wire out of post pipe and insert the post pipe to the post bracket. (Refer to fig. 1)
4. Fasten the post pipe with two bolts. (Refer to fig. 1)
5. A long bolt should be connected to the upper side.
6. Insert the wire to the post pipe. (Refer to fig. 2, 3)
7. If the scale is not properly level, please adjust 4 leg (adjusting bolt) at the bottom of the scale so as to center the bubble of the leveling gauge.

**Note :** Place the scale on a flat and stable surface. Inside the indicated circle.

# TEST MODE

## How to enter test mode

1. Open the top cover of indicator and power on with pressing CAL switch in the left top. At that time, LCD screen shows “ZEro = tEst, tArE = CAL” message and pressing “Zero” key moves to tEst 1.
2. Press G/N key for approx 3 seconds.

## Test menu (tEst 1~7)

TEST 1 : Liquid Crystal Display test

TEST 2 : Load cell and A/D conversion test

TEST 3 : Key test

TEST 4 : RS-232C communication test

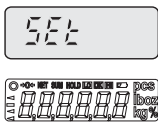
TEST 5 : Temperature test

TEST 6 : Battery test

TEST 7 : RTC test

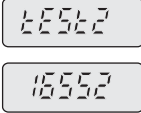
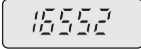
## TEST 1 (Enter ' TEST ' mode to start TEST 1)

### FUNCTION : LCD TEST

KEY	LCD SCREEN	DESCRIPTION
[ ENTER Key] Press once : Test running One more time : Next menu [ * Key] : Back light test		Display TEST 1 state

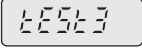

## TEST 2

### FUNCTION : A/D Conversion TEST

KEY	LCD SCREEN	DESCRIPTION
[ ENTER Key] Press once : Test running One more time : Next menu		Display TEST 2 state
		Display the digital value Corresponding to current weight

## TEST 3

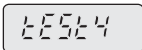

### FUNCTION : Key test

KEY	LCD SCREEN	DESCRIPTION
[ ENTER Key] Press once : Test running		Display TEST 3 state
One more time : Next menu		Pressing the key to test shows the key code.

Key name	code	Key name	code
.	1	ZERO	2
TARE	3	GROSS /NET	4

## TEST 4

### FUNCTION : RS-232C communication test (Computer link test)

KEY	LCD SCREEN	DESCRIPTION
[ ENTER Key] Press once : Test running		Display TEST 4 state
One more time : Next menu		Receive : " 1 " Transmit : " 2 "

Reference 1. Connect the computer COM port with RS-232C connector of indicator before running this test. (Possible only at installing RS-232C option)

Reference 2. Press " 1 " in computer keyboard and check that " 1 " is shown in LCD screen of indicator and Check that the next ASCII code value, " 2 " is inputted in the computer.

## TEST 5

### FUNCTION : Temperature test

KEY	LCD SCREEN	DESCRIPTION
[ ENTER Key] Press once : Test running One more time : Next menu		Display TEST 5 state for temperature
		Current temperature is shown

## TEST 6

### FUNCTION : Battery test

KEY	LCD SCREEN	DESCRIPTION
[ ENTER Key] Press once : Test running		Display TEST 6 state for battery voltage value
		Current battery voltage is shown.



## TEST 7

### FUNCTION : RTC test

KEY	LCD SCREEN	DESCRIPTION
[ ENTER Key] Press once : Can see the current date & time Press twice : Exit Test Mode [ * Key ] Can see date & time Alternately		Display TEST 7 state for current date & time


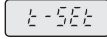
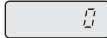

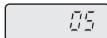
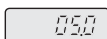



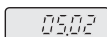






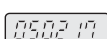
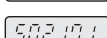
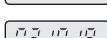
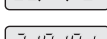









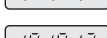
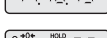


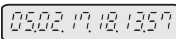
## Current date & time setting method

In the normal mode,

Press the TARE Key long and can see the message  and .

After this step, You can input the current date and time as follows

### How to set the current date and time

KEY	LCD SCREEN	DESCRIPTION
 [TARE] Key : Shift one digit to the left	 	Date & time setting mode  Initial value
 [STAR] Key : Shift one digit to the right	 	 &  : increase 5 [Year : 2005] 
[ZERO/MODE] Key : Reset the input value	 	 &  : increase 2 [Month : 02]  &  : increase 1
 [N / G] Key : Increase input value	   	 &  : increase 7 [Day : 17]  &  : increase 1  &  : increase 8 [Hour : 18]  &  : increase 1
 [ENTER] Key : Exit this input mode & Go to normal mode	 	 &  : increase 3 [Minute]   2005/02/17 18:13

If you input wrong date, this scale display "out" message and doesn't save the date.

# ERROR MESSAGE DESCRIPTION & MANAGEMENT

## Errors in Weighing Mode

### Err 01

#### ■ Cause

The Indicator can't be initialized due to platform shaking.

#### ■ Management

Put the platform on a flat place without shaking and power on.

### Err 02

#### ■ Cause

The load cell is connected wrongly or A/D conversion part has a fault.

#### ■ Management

Check that the load cell is well connected with main unit.

### Err 03

#### ■ Cause

The calibration isn't executed or the data of internal memory is lost due to a electrical shock.

#### ■ Management

Perform the required specification again in setting mode.

### Err 09 (Zero Key)

#### ■ Cause

The current weight exceeds zero range.

### Err 10

#### ■ Cause

The specified TARE weight exceeds the maximum capacity.

#### ■ Management

Set the TARE weight lower than maximum capacity.

Or set the maximum capacity higher than the desired TARE weight in calibration menu and perform the calibration again.

### **Err 13 (Zero Range with power on)**

- **Cause**

The initial zero range exceeds above 10% of maximum capacity.

- **Management**

Check the load cell state.

### **Over**

- **Cause**

Too heavy object is put on platform so that it may exceed the maximum capacity.

- **Management**

Never put the weight exceeding the maximum capacity.

If the load cell is damaged, replace the load cell.

## **Errors in Count Mode**

### **Err 61**

- **Cause**

The count unit weight and sample weight are set too high.

- **Management**

Set the count unit weight low or the count sample quantity high.

### **Err 62**

- **Cause**

The count unit weight and sample weight are set too low.

- **Management**

Set the count unit weight high or the count sample quantity low.

## MEMO

## MEMO

## MEMO



# BW-1N

Bench Scale



CAS BLDG., # 440-1, SUNGNAE-DONG,  
GANGDONG-GU, SEOUL, KOREA

TEL\_ 82 2 2225 3500

FAX\_ 82 2 475 4668

[www.globalcas.com](http://www.globalcas.com)