

WorldWEIGH

BWS Series

Indicator

Technical Manual

800-000316






V1.09p

CONTENTS

1. SPECIFICATION.....	2
2. INTRODUCTION.....	3
Charging.....	3
3. INSTALLATION.....	4
Installation.....	4
Wiring.....	4
4. KEYS DESCRIPTION.....	6
Key Board.....	6
Secondary functions of the keys.....	8
5. OPERATION.....	8
5.1. Basic Operation.....	8
1. Power On /Off.....	8
2. Zero.....	8
3. Tare.....	8
4. Select Unit.....	8
5.2. Check Weighing.....	9
5.2.1. Set Limits.....	9
5.2.2. Set Check Weighing.....	9
5.3. Accumulation.....	10
5.3.1. Memory Recall.....	10
5.3.2. Memory Clear.....	10
5.3.3. Automatic Accumulation.....	11
5.4. Parts Counting.....	11
5.5. Animal Weighing.....	12
5.6. Key Board Lock.....	12
5.7. Set Auto Power Off.....	13
5.8. Set Back Light.....	13
6. PARAMETERS.....	14
7. CALIBRATION.....	18
8. RS-232 OUTPUT.....	19
8.1. Specifications.....	19
8.2. Connector.....	19
RS-232 Output.....	19
8.3. Continuous output protocol.....	19
9. DRAWING.....	20
9.1. BWS Drawing.....	20
9.2. BWS Parts List.....	21
10. ERROR CODES.....	22

PRECAUTIONS

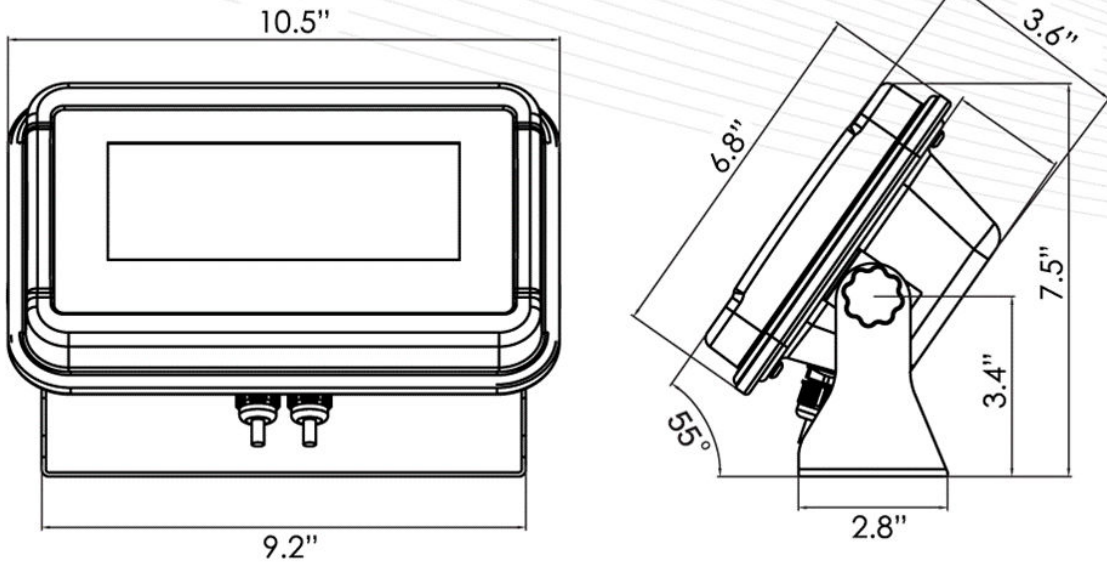
	 WARNING
	DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, CLEANING, OR SERVICING. FAILURE TO DO SO COULD RESULT IN BODILY HARM OR DAMAGE TO THE UNIT.

 CAUTION
<ul style="list-style-type: none">• Only qualified Service personal to service this instrument• Before connecting or disconnecting any components, Disconnect power.• Failure to observe these precautions could cause bodily harm or damage or destruction of the equipment.



- The BWS weighing indicator is a precision electronic instrument, handle with care.
- Do not install in direct sunlight.
- Verify the local voltage and receptacle type are correct for the scale.
- Pluggable equipment must be installed near an easily accessible socket outlet.
- Avoid unstable power sources. Do not use near large consumers of electricity such as welding equipment or large motors.
- Avoid sudden temperature changes, vibration, wind and water.
- Avoid heavy RF noise.
- Avoid high stactic areas.
- Keep the indicator clean.

1. SPECIFICATION



Model	BWS
Display	52mm LCD/ 2" LCD
Housing	Stainless Steel
Operating Temperature	0°C - 40°C / 14°F - 104°F
Resolution	1/30,000 (Non Approved) 1/6000 (NTEP Approved)
Key Pad	7 Keys
Power	Battery (6V/4Ah) estimated run time on fully charged battery 50 hours
Calibration	Automatic External
Interface	1 RS-232 Output
Load cell drive Voltage	Max: 5V/150mA
Load Cells	Up to 4 load cell
ADC	Sigma Delta
ADC Update	≤1/10 second
Stabilization Time	One second typically

2. INTRODUCTION

- The BWS series weighing indicator amplifies signals from a load cell, then converts it to digital data and displays it as a mass value number
- It is suitable for general weighing or more specialized applications such as check weighing, animal weighing and accumulation applications
- Can be connected to a printer, PC, or scoreboard
- Large LCD with white LED back light displays



Charging

- To charge the battery, plug cord into power outlet. The scale does not need to be turned on, to charge.
- The battery estimated charge time to full capacity is 12 hours.
- An LED to indicate the status of battery charge is located on the left side of the Display. When the scale is plugged into a power source the internal battery will be recharging. If the LED is green, the battery has a full charge. If it is red, the battery is nearly discharged and if yellow, the battery is being charged.
- Verify that the AC power outlet is properly protected.

Note: Please charge the battery before using the scale for the first time.

3. INSTALLATION

Installation

- Place the Indicator on a table or connect to the supplied mounting bracket.
- Connect the load cell cable to the indicator Bd9 load cell connector.
- Plug equipment into an easily accessible outlet with a protective ground/ earth contact.
- Turn BWS on with use of the On/Off key. If you want to turn off, press this key again.
- Display will start self checking/ followed by number of calibrations/ number of option changes/ then error 4/ Then enter into main weighing screen.
- Warm-up time of 15 minutes helps stabilizes the measured values after switching on.
- Calibrate with exact calibration weights, a minimum 1/3 of the scale capacity should be used for calibration. For calibration instructions see details under parameters.

Wiring

Supplied 18 foot cable (to load cells)

SIG-	Green
SIG+	White
EX-	Black
EX+	Blue
SEN-	Yellow
SEN+	Red
Shield	Grey
SEN and EX needs to be tied Together if no sense wires..	

Self made cable (from BWS)

Pins to DB9	
1	SIG-
2	SIG+
3	EX+
4	EX-
5	SEN+
6	Connect to 7
7	Connect to 6
8	SEN-
9	Shield

Terminal strip and Cut pigtail wiring on the next page

Wiring

Cut Pigtail

Pins to DB9	
Green	SIG-
White	SIG+
Brown	Shield
Black	EX-
Grey	SEN-
Shield	Sen+
Blue	Ex+
Yellow	I/O gnd (Must connect to red)
Red	I/O (must be connected to Yellow)

Wiring

Terminal Strip

VCC

GND

TXD

RXD

I/O

GND

EX +

Sen +

Sen -

EX -

SHLD

SIG +

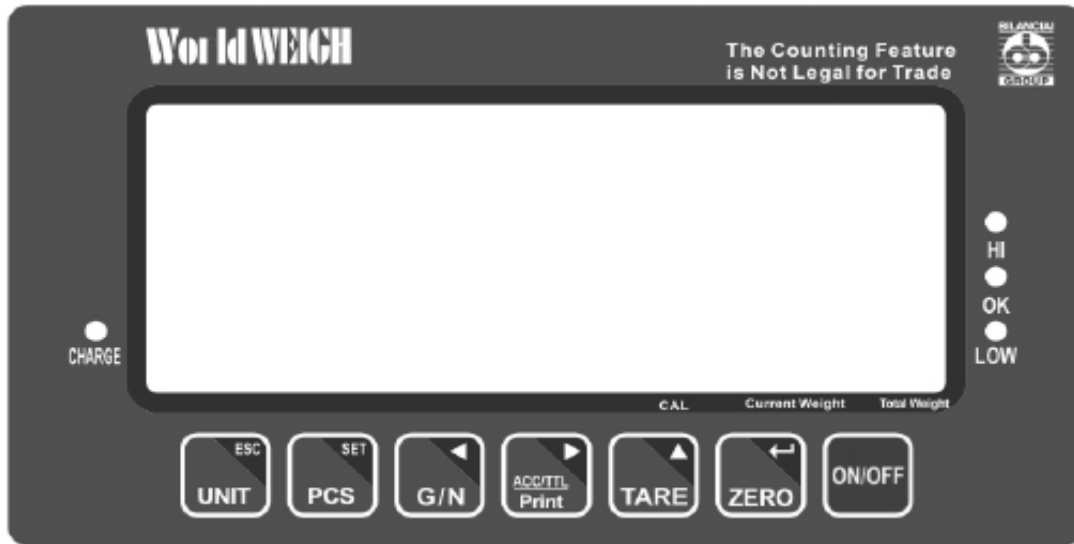
SIG -








I/O and Ground need to be connected together if wired directly to the board

If four wire Install make sure jumpers under the load cell connection are shorted on main board. (in parts bag)

4. KEYS DESCRIPTION







Keyboard



Keys	Description
	Power turn ON/OFF
	Zero Display
	To perform a tare function, subtracts weight
	Accumulator key, current values will store to the memory, to send the data to printer or PC
	Shift between Gross / Net Weight
	Counting
	To change the unit of measure

Secondary functions of the keys (Setup)

(See Parameter section 6)

Secondary Functions	Keys
To confirm the selected menu	
To change the menu and active digit	
To move the active digit to right	
To move the active digit to left	
To enter in to the menu	
Escape from the menu to normal operation	


5. OPERATION

Initial Start-up


Warm-up time of 15 minutes helps stabilize the measured values after switching on.

5.1. Basic Operation


1. Power On/Off:




Switch on the BWS by pressing the  key.
The display is now switched on and the start-up test has started, if wanting to switch off, press the  key again.

2. Zero:


Environmental conditions can lead to the BWS not being exactly zero even if the weighing platform is clear of a weight. However, you can set the display of your BWS to zero any time by pressing the  key and therefore ensure that weighing starts at zero.

3. Tare:

The weight of any container can be tared by pressing  button so that with subsequent weighing the net weight of the object being weighed is always displayed.

- Load weight on the platform.
- Press  key. Zero is displayed, and tare is subtracted.
- Remove weight from the platform. Tared weight is displayed. The BWS can only store one tare value. (see parameter P4) It will be shown with a minus value.
- Press  to change between gross weight and net weight.
- To clear the tare value, remove the load and press  key. Zero is displayed, tare weight is cleared.














4. Select Unit: (Units not being used can be disabled see parameter 6)

Press the  key, to change units kg/g/lb/oz.





5.2. Check Weighing

The BWS can set an upper or lower limit when weighing with a limited range. During the limit controls the BWS will indicate whether the upper or lower limits value has been met and an alarm will sound.

5.2.1. Setting Limits:

- Press  and  key together, display will show **set h**.
 - Press  key to select **set h** or **set l**
 - Press  key to confirm, display will show **00000** and the last digit will blink.
 - Enter the high limit value by using  and  keys to change the active digits and press  key to increase the value.
 - Press  key to confirm, display will show **set l**
 - Enter the Low limit value by using  and  keys to change the active digits and press  key to increase the value.
 - Press  key to confirm.
- To escape from the settings press  key.


5.2.2. Set Check Weighing:

- Press  and  key together, display will show **set h**.
- Press  key to select display **beep**.
- Press  key to confirm, display will show **none** or **ok** or **ng**
- **Check mode none** : No beep sound in the limits. Function turned off.
- **Check mode ok** : When the weight is between the limits. OK will show and beeper will be sounded.

- **Check mode ng** : When the weight is out of the limits, the beeper will be sounded and OK will show.


Note: Check weighing available only when weight more than 20d

5.3. Accumulation


The scale can be set to accumulate manually by pressing  key. For settings, see the parameter **p 1 Com » mode » pr 2**

Before operation scale should be stable and returned to zero, accumulation available only when weight is more than 20d.

Accumulation Operation

- Place the load on the platform.
- Press  key, when STABLE is displayed on the screen.
- Display will be show **acc 1** then will show the total saved value. These displays will only be shown for three seconds.
- Remove the weight from the platform.
- When display get zeroed and stable then place the second weight on the platform.
- This will continue until the memory gets full or 99 items.

5.3.1 Memory Recall:

To recall the memory press  key.

Display will be show **acc X** (X: Total number of accumulations) then will show the total saved value. These displays will be shown for only three seconds.

5.3.2. Memory Clear:

To clear the memory, press  and  keys together. Display will show **acc 0** , all accumulation memory will be cleared.

5.3.3. Automatically accumulation:

The scale can be set to accumulate automatically. For settings, see the parameter **p 1 Com » mode » auto**


Automatic Accumulation Operation

- Place the load on the platform.
- When display shows a STABLE indication, display will be show **acc 1** then will show the total saved value. These displays will be shown only for three seconds.
- Remove the weight from the platform
- When display get zeroed and stable then place the second weight on the platform.
- This can continue until the memory gets full or 99 items.


5.4. Parts Counting


Parts Counting Operation

- Place the load on the platform
- To enter parts counting, press  key, display will then show **p 10**

Press  to change the parts quantity.

Options: **p 10 / p 20 / p 50 / p100 / p 200**

- Press  key to confirm, display will show **----** then will show the quantity of the item on the platform.
- Then items can be added to the platform, display will update the parts quantity automatically.



Press  key to go back to the weighing mode.

5.5. Animal Weighing

BWS can be used for unstable loads. This function is called animal weighing. For settings, see parameter `p 3 oth » anm`

When load is applied on the platform, after a few seconds of a stable weight, the reading will be locked.

Adding or removing loads, updates the weighing locked values.

To enter or exit animal weighing mode, press and release  and  key together at the same time.




When in animal weighing mode **HOLD** will be indicated on the display.

5.6. Keyboard Lock

To set key board lock, see parameter `p 3 oth » lock`





When the keys are not used within 10 minutes, the keys will be locked automatically.

After entering into the lock function, when a key is pressed display will show `k-1ok`. Then will return to the normal display.



To unlock and use the keys again, press and hold ,  and  keys for three seconds. Display will show `u 1ck` Then the BWS returns to the normal display.

5.7. Set auto power off

To set auto power off of the BWS



- Hold  key three seconds display will show **setb1**
- Press  key to change **set of** and press  key to confirm.
- Press  key to change the options.

Set of	off	To set auto off function off, for scale always on
	of 5	Set to turn off five minutes later
	of 15	Set to turn off fifteen minutes later



- After selecting the auto off option press  key to confirm and press  key to escape from the settings.

5.8. Set Back Light

To set back light.

- Hold  key for three seconds display will show **setb1**
- Press  key to confirm.







setb1	au	To set auto option. When in use back light will be on, when use stops back light also will off.
	on	To set always on. Back light will always be on.
	off	To set back light off. Back light will be always off



- After selecting the back light option press  key to confirm and press  key to escape from the settings.

6. PARAMETERS

For Key function in Setup menu see page 7

To setup parameters, turn on the scale.

- Press and Release  key during the self checking countdown
- Display will be show **Pn**
- Press  and release, then press  and release, then  and release keys to enter setup, display will show **PD CH-**
- Inside the menu, Press  key to change selection and press  key to confirm selection

Menu	Sub Menu	Description	
P 0 CH- CHECK WEIGHING	Set H	Set high limit for check weighing	
	Set lo	Set low limit for check weighing	
	beep	None	No beep for check weighing
		Ok	Beep, when check weighing is between the limits
ng		Beep, when check weighing is out of the limits	
P 1 Coi COM PORT SETTINGS	Mode (Type of print Function)	Options: Cont : Send data continuously st 1 : Send data one time, when stable. st c : Send data continuously, when stable P r1 : Send data one time, when press  Key (weight needs to return to zero) Pr 2 : Send data to print and accumulation, when press  .key Auto : Auto accumulate and auto print mode when weight is stable and or return to zero. Ask : NOT Used Wireles : NOT Used	

BWS Series Indicator Technical Manual

Baud (Baud Rate)	To set the baud rate Options: 600 / 1200 / 2400 / 4800 / 9600
Pr (Parity)	To set the parity Options: 7 e1 / 7 o1 / 8 n1
Ptype (Printer Type)	To set printer model Options: Tm295 : Epson tm295 Tm220 : Epson tm220 Lp50 : WorldWEIGH LP50
Lab (Print Formats) (these are not customizable)	To set print format 4 choices Options: LAB 0 (Accumulation) NO. NET: 0.666kg TARE: 0.222kg GROSS: 0.888kg TOTAL: 0.888kg LAB 1 (G/T/N) NET: 0.666kg TARE: 0.222kg GROSS: 0.888kg LAB 2 (What is on the screen) NET: 0.222kg or GROSS: 0.222KG LAB 3 (Piece count ONLY) U.W.: 0.00998 lb NET : 1.996 lb TOTAL: 200Pcs LAB 4 (Piece count and normal weighing mode) U.W.: 0.01000 lb NET : 2.002 lb TARE : 1.000 lb TOTAL: 200Pcs <piece count U.W.: 0.00000 lb NET : 0.996 lb TARE : 1.018 lb TOTAL: 1.199 lb <gross











<p>P 2 mod MODE (K3 to enter)</p>	<p>Si g r</p>	To select single range operation		
		Count	To check internal counts	
		Deci	To set decimal points 0 / 0.0 / 0.00 / 0.000	
		Div	To set increment 1 / 2 / 5 / 10 / 20 / 50	
		Cap	Set Capacity	
		Cal	Calibration	
		gra	Gravity	
	<p>Dual 1</p>	To select dual range - mode 1 Note: Once active second interval (div 2), Then second interval will work until display return to zero		
		Count	To check internal counts	
		Deci	To set decimal points	
		Div	Di v 1	To select first division
			Di v 2	To select second division
		Cap	Cap 1	To select first capacity
			Cap 2	To select second capacity
		Cal	Calibration	
		gra	Gravity (Do not Change)	
		<p>Dual 2</p>	To select dual interval - mode 2 Note: First interval will active in CAP 1 Second interval will be active in CAP 2	
	Count		To check internal counts	
	Deci		To set decimal points	
	Div		Di v 1	To select first division
			Di v 2	To select second division
	Cap		Cap 1	To select first capacity
			Cap 2	To select second capacity
	Cal		Calibration	
gra	Gravity			
<p>P3 otH OTHER</p>	Lock	To set keypad lock Options: on / off		
	anm	To set animal mode. Options: on / off		

P4 <i>S t</i> TARE	St ON	Multi tare operation turn on
	St OFF	Multi tare operation turn off
P5 <i>CLr</i> RESET	CLr CAL	Clear all calibration data
	CLr oPt	Clear ALL parameters
P6 <i>Unt</i> UNIT	kg	To set “kg” unit Options: on / off
	g	To set “g” unit Options: on / off (lb or kg must be set to .000 to be able to turn on grams) once selected to the main weight screen change unit to g then enter back into P6 and you can turn off kg or lb if needed
	lb	To set “lb” unit Options: on / off
	oz	To set “oz” unit Options: on / off








7. CALIBRATION

Jumper K2 comes shorted Allowing Front Panel access to Calibration
if k2 is not shorted press K3 button inside the unit to enter calibration

To calibrate, turn on the scale.

- Press and release  during the self checking countdown
- Display will be show **Pn** (Password)
- Press  and release, then press  and release, then  and release, to enter setup, display will show **PO CH-**
- Tap the  Key until display will show **P 2 Mod.**
- Press the  key to confirm and press  to select **SINGLE DUAL 1 DUAL 2** (single or Dual range)
- Press the  key to confirm and press the  key till display shows **CAL**
- Press  key to confirm.

Calibration **CAL**

- Press the  key to enter calibration, display will show **UnLd**
- Remove all the weight from the platform.
- When indicator is stable, press the  key to confirm.
- The Display will show the last calibration weight. To change the calibration weight value, press  and  keys to select the active digits then the  key to increase the value.
- When the calibration value is correct, press  key to confirm.
- Display will show **LoAd**
- Place the calibration weight on the platform. (suggested 1/3 capacity)
- When indicator is stable, press  key to confirm.
- Display will show **PASS** and continue to normal weighing mode

8. RS-232 OUTPUT

8.1. Specifications: (1 Com port)

RS-232 output of weighing data
 Code : ASCII
 Data bits : 8 data bits
 Parity : Parity selectable
 Baud rate : 600bps to 9600bps selectable

8.2. RS-232 (Db9 type connector)

Pin 2	RXD	Input	White	Receiving data
Pin 3	TXD	Output	Blue	Transmission data
Pin 5	GND	—	Green	Signal ground

Db9 Connector to computer/printer (null modem)

Indicator	Computer
Pin 2:	Pin 3
Pin 3:	Pin 2
Pin 5:	Pin 5

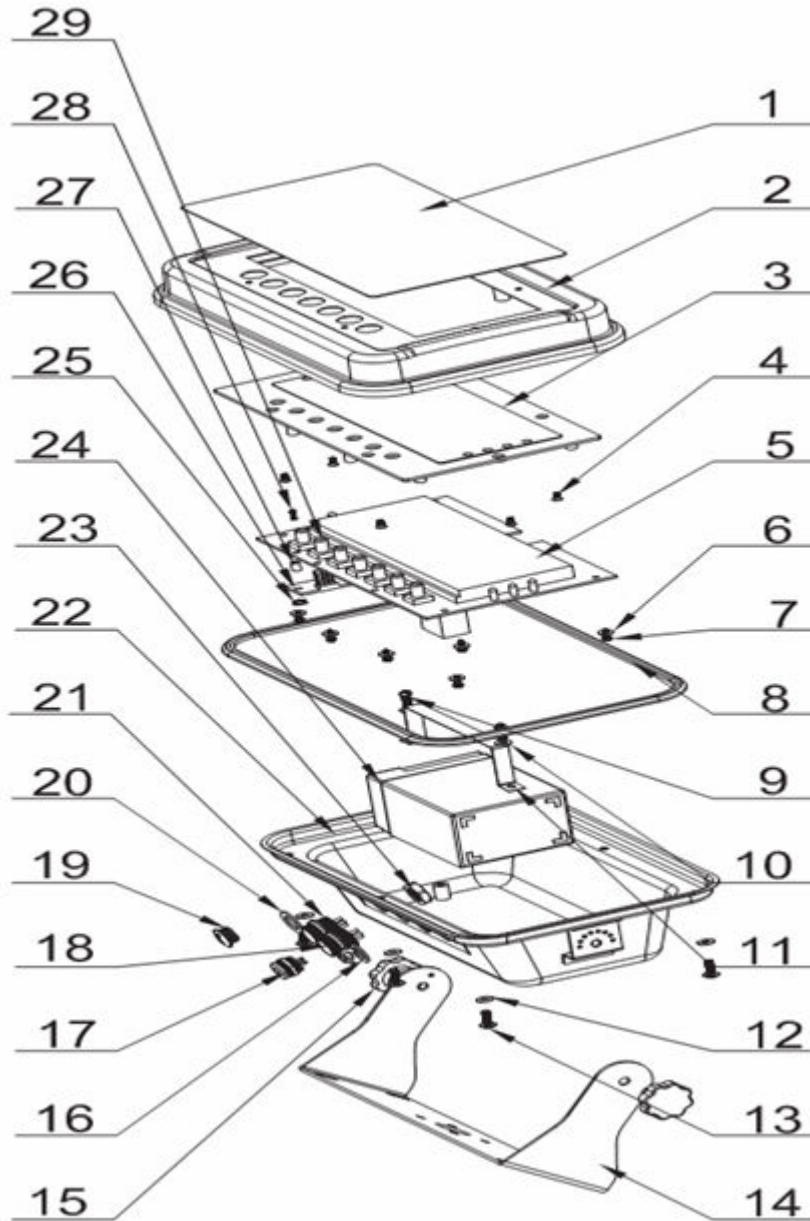
8. 3. Continuous output protocol

Weighing mode

<STX>	<POL>	<WWWWWWW>	<UNIT>	<G/N>	<S>	<TERM>
ASCII 02 decimal	Polarity: <space>=Positive <->=Negative	Weight:7 digits, right-justified, dummy zeroes, decimal point with no leading zeroes except for leading zero immediately preceding the decimal point. leading zeroes transmitted as spaces.	L= pounds K= kilograms O= ounces G= grams	G=Gross N=Net	Status: <space>=Valid I=Invalid M=Motion O=Over/under range	<CR><LF> or<CR>

9. DRAWING

9.1. BWS Drawing



9.2. BWS Parts List

No	Parts	Qty	PN	Spec
1	Key Panel	1	899-300086	
2	Front Cover	1		
3	Display Protection Plate	1		
4	Nut	6		M3*6
5	Main Board	1	899-300085	
6	Washer	6		8x3.1x1.5
7	Star (+) Self Thread screw	6		M3x8
8	Water Proof Rubber Bar	1		
9	Star (+) Screw	2		M4x10
10	Washer	2		M4
11	Battery Clamp	1		
12	Washer	6		M4
13	Star (+) Big head Screw	6		M4x12
14	Bracket	1		
15	Bracket Screw	2		
16	Water Proof Adaptor jack	1		
17	Interface Module	1		
18	Air connecter	1		5Pin
19	Plug	1		
20	Rubber Spacer	3		
21	Air Connector	1		7Pin
22	Back Cover	1		
23	Air Connector Water Proof Nut	1		
24	Battery	1	899-300022	6V/4Ah
25	Nut	1		M3x6
26	Main Serial board	1		
27	Spacer	1		
28	Star (+) Screw	1		3Mx20
29	Micro Switch Cap	7		
	Homerun 15Ft with DB9		899-300041	
	Rs232 Board	1	899-300087	

10. ERROR CODES

Error Message	Description	Solution
-----	Maximum load exceeded	Unload or reduce weight.
Err L	Low reading	Re-check wiring
Err 4	Zero setting error	Zero setting range exceeded due to switching on.(4%max) Make sure platform is empty.
Err 5	Key board error	Check the keys and connecter.
Err 6	A/D value out of range	Make sure platform is empty. Check the load cell connectors.
Err 9	Unstable Reading	Check any air variation, vibration, RF noise and binding somewhere. Check the load cell and connectors.
Err 17	Tare out of range	Remove the load and restart scale again.
--OL--	Over range	Remove the load. Recalibrate
FAIL H FAIL L	Calibration Error	Recalibrate
Err P	Printer error	Check the printer and settings.
flashing backlight	Battery low	Recharge battery, check the voltages.
bA LO LO bA	Battery low	Recharge battery, check the voltages.



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