DIGI®
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DS-425

Bench Scale

Installation/Service Manual

RICE LAKE WEIGHING SYSTEMS
Industrial Solutions on a Global Scale®

ISO 9001 REGISTERED

74262

DS - 425 OPERATION MANUAL

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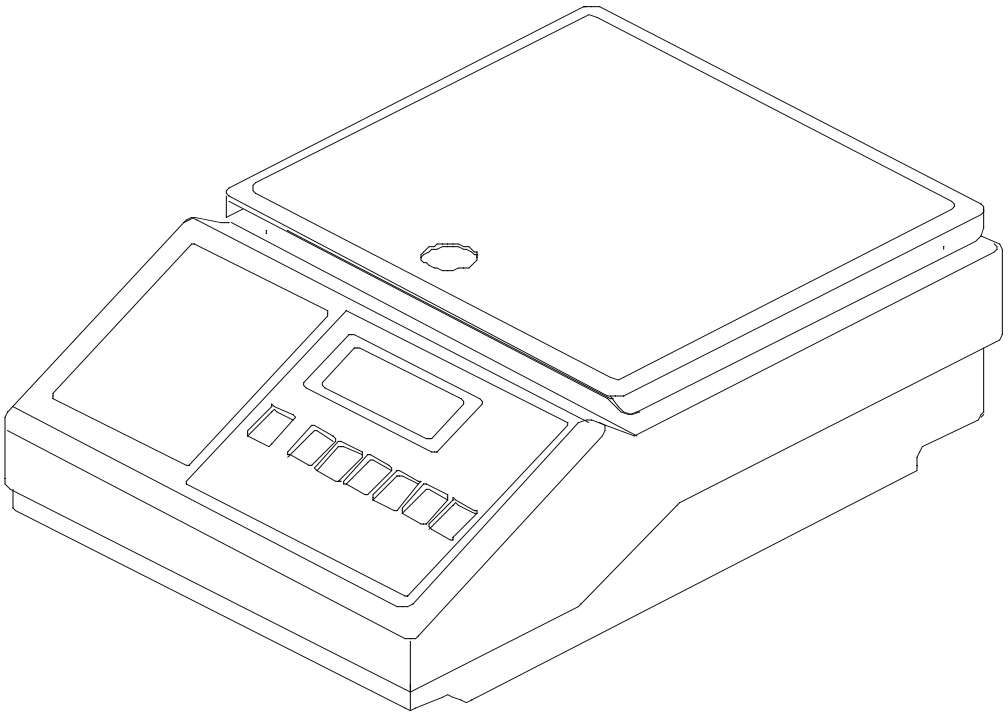
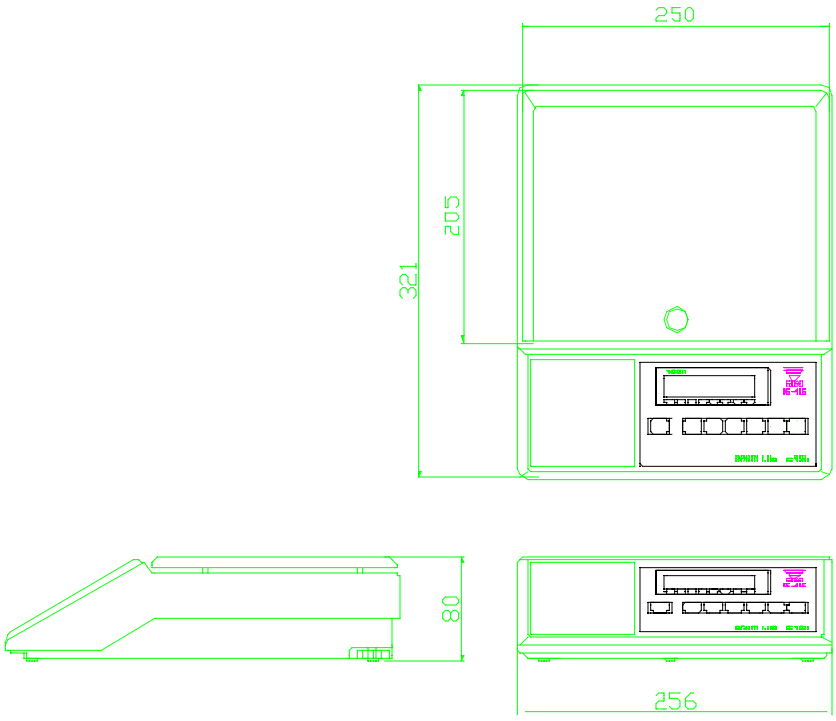
1.0. GENERAL

1.2. Appearance

1.2.1 Overall View

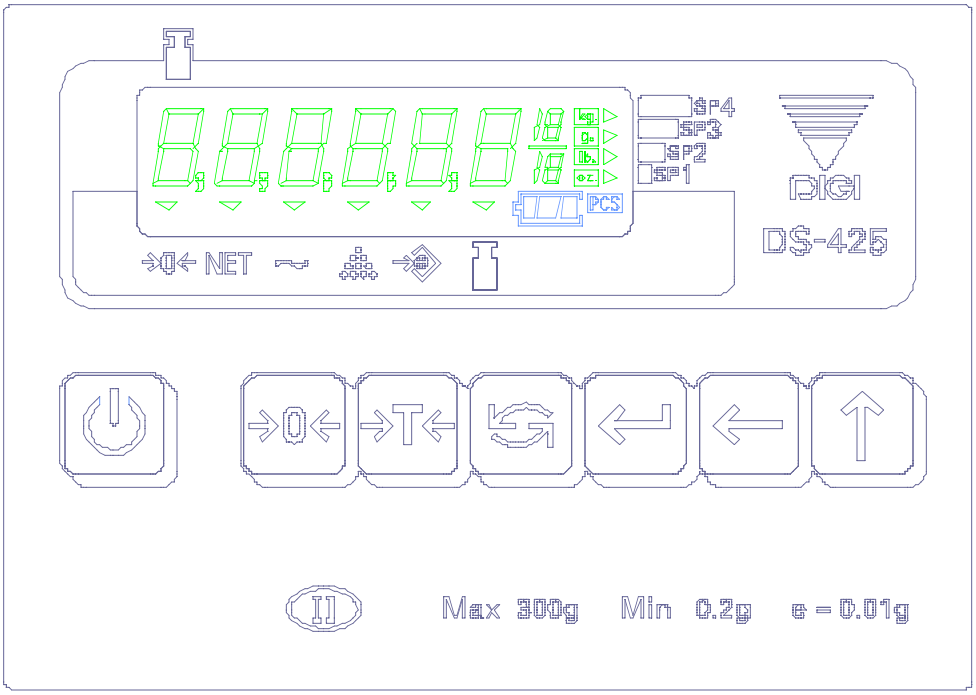




1.0. GENERAL

1.2. Appearance

1.2.2 Display Panel View



1.3. Model Specification

1.3.1. Main Feature

- Model : DS-425
- Display Resolution : 1/1000, 1/1500, 1/2000, 1/2500, 1/3000, 1/5000, 1/6000, 1/7500,
  1/10000, 1/15000, 1/20000, 1/25000, 1/30000
- Internal Resolution : 1/250000, 1/300000
- Capacity : 300g, 600g, 1.5kg, 3kg, 6kg, 15kg,30kg
- Display : Liquid Crystal (With back-light new design GD-584)

  Weight display : 8 Segment , 6 Digit

  Weigh Unit : 4 Symbol (kg, g, lb., oz.)

  Other Symbol : 4 Set Point Indicator Symbol (S1, S2, S3, S4)

  8 other ind. symbol (ZERO,NET, STD, U.W, U.C, MEM, BATT, PCS)
- Interface : RS-232(OPTIONAL)
- Load cell : 300g-K-Type,600g-30Kg N-Type.

- Mechanical Detail : Housing DS-422 diff. color Mechanical Keyboard same with DS-422
- Physical Dimension : Out Side Dimensions :321mm(L)X256mm(W)X80mm(H)
  Platter Size: 105mm x 160mm(300g) 205mm x 250mm(600g Upwards)

1.0. GENERAL

1.3. Model Specification

1.3.2. Operation condition

- Power Source : AC 220V (+10%,-15%) 50HZ/60HZ
  (Subject to local regulations)
- Operating Temperature: 0°C to 40°C
- Operating Humidity : <85% RH

1.3.3. Main components used

- Microcomputer : Atmal AT89C52,8bit
- Display Device : Liquid Crystal Display (With back-light GD-584)
- LCD Display Drive : NEC uPA7225G
- A/D Board : STB-0054 A/D.(For DS-422),New A/D Cover.

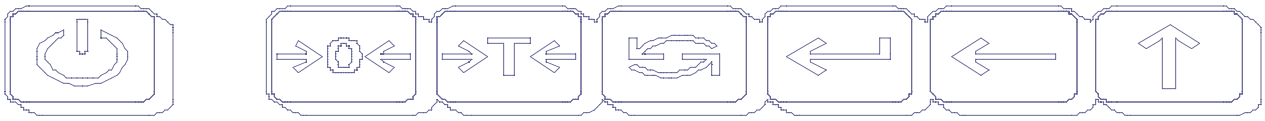
1.3.4. Function specification

- Weight Base Unit set: Two Base Unit g,kg
- Weight Unit Change Select: ”g” can change to lb. Or oz, “Kg” can change to lb. Or oz.
- The Scale Can Use at Count mode.
- The Scale’s weight & count data can be transferred by RS-232 interface out to PC.

1.4. Layout and Function

1.4.1. Key Layout and Function

a) Key Layout



b) Key Function

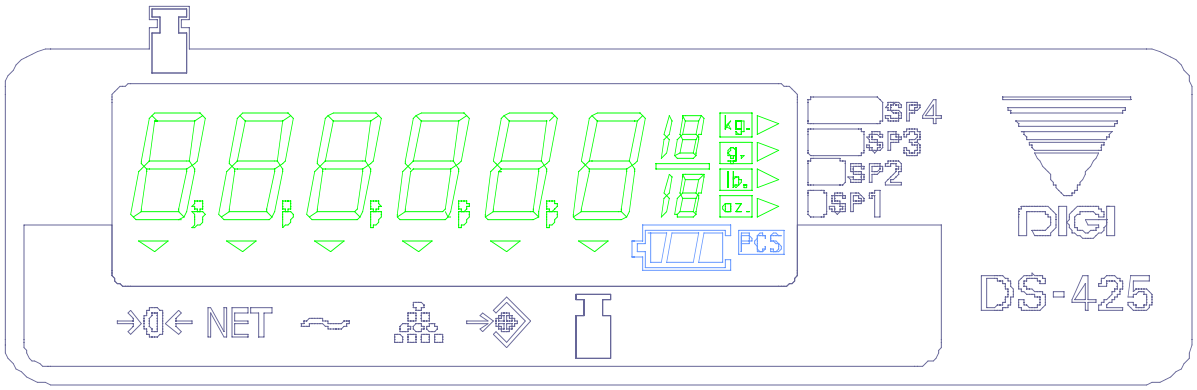
Key Name	Key Definition and Function
[ON/OFF]	For turning the scale ON and OFF
[REZERO]	Resetting the scale to zero.
[TARE]	For setting & clearing tare value.
[MODE]	Used to entry into the following modes : Weighing mode or Counting mode.
[ENTER]	Used for storing the data.
[SHIFT]	Used to change digital position.
[INC]	1)Used for increase data value when digit blinking;2)switch the weight unit.

1.0. GENERAL

1.5. Layout and Function

1.5.1. Display Layout and Function

a) Display Layout



ZERO NET STD U.C SAF SAC

b) Indicators

Indicator	Indication
ZERO	When the weigh is zero and also stable, the ZERO indicator light is lit.
NET	When display is net weight, the indicator light is lit.
STD	When weight is stable, the indicator light is lit.
U.C	Lighting when scale working in counting mode.
SAF	Setpoint ALARM Mode is “ON”, At FILLING Application.
SAC	Setpoint ALARM Mode is “ON”, At CHECK WEIGHING Application.

2.0. INITIAL SET-UP

2.1 Initial Set-up Procedures

Before setting up the machine, remove the load cell stoppers which are located at the top of the scale as shown in the diagram below.

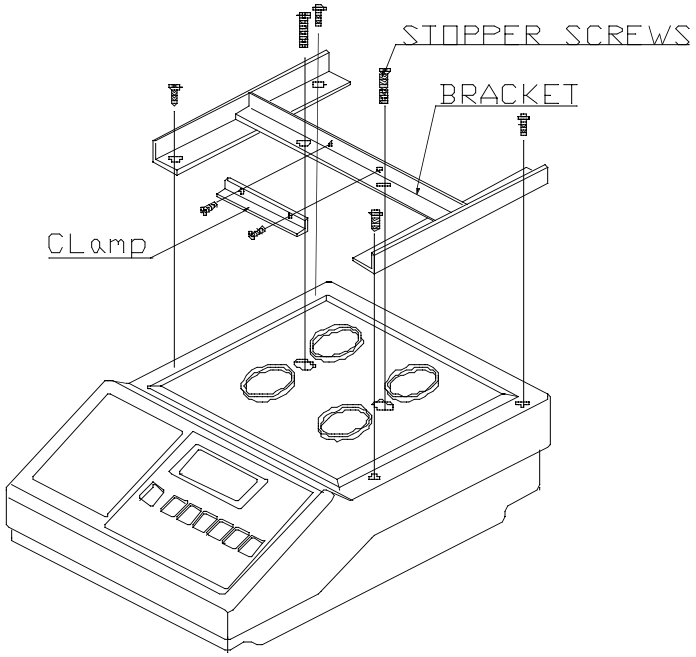


DIAGRAM FOR DS-425 600G, 1.5KG

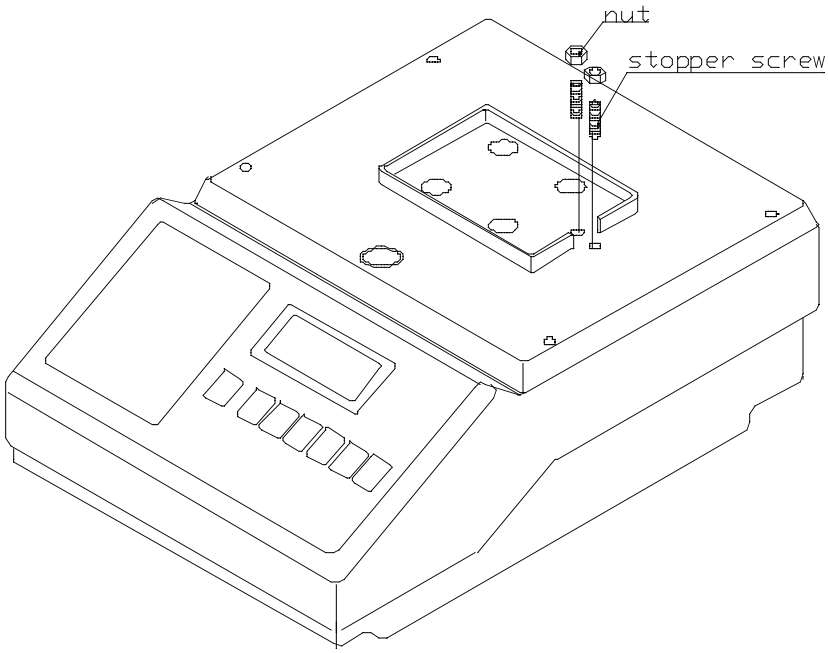


DIAGRAM FOR DS-425 300G

2. INITIAL SET-UP

2.1.2. Initial Set-up Procedures

Do the following steps before proceeding for scale calibration.

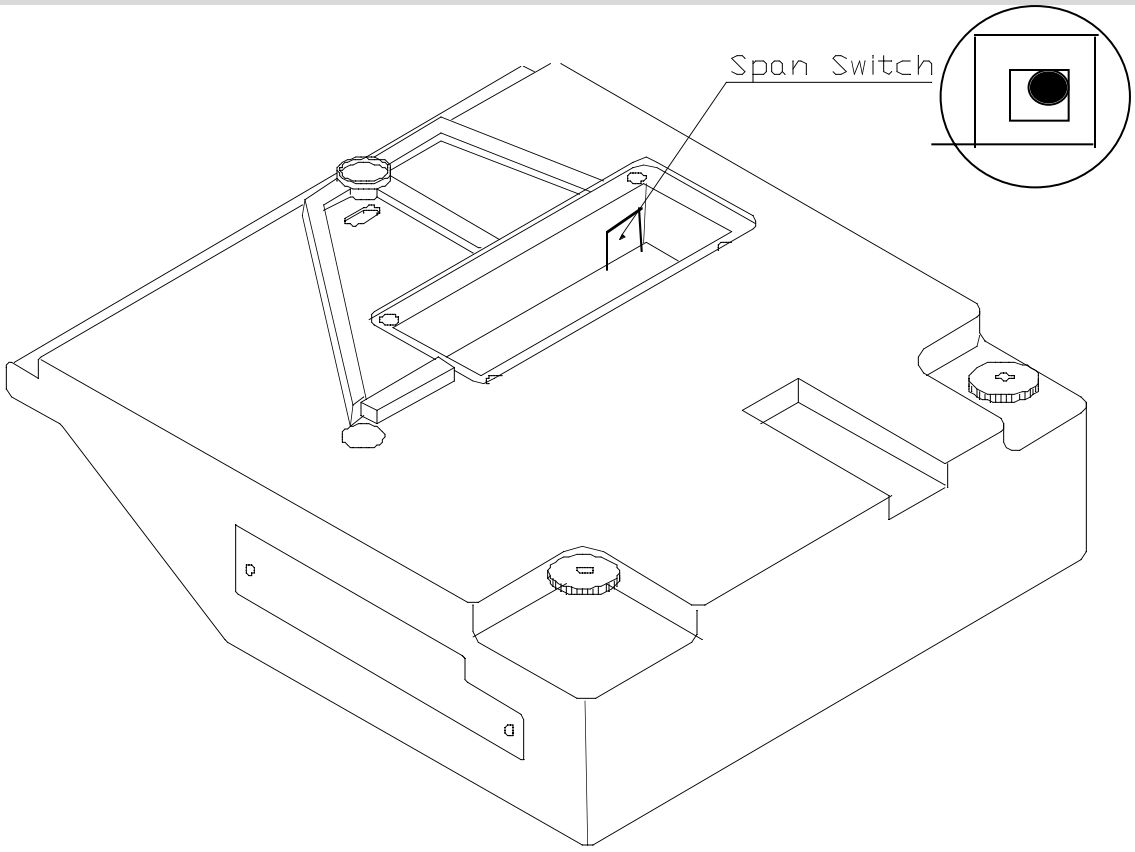
a) Place the platter on the platter support of the scale.

b) Turn on the power and check that the scale is functioning.

c) For calibration of the scale, enable the span switch with a thin rod.
Refer to the diagram next section for the span switch position.

d) Please refer to Span Adjustment for further detail.

2.2 Location of the Span Switch



BOTTOM SIDE OF DS-425

3.0. OPERATION

3.1. System On

OPERATION

1. Starting with the System Off.
2. Press **[_]ON/OFF** key to turn on the scale. After the Segment Checking the DS-425 will go into the Weighing Mode

3.2.1. One Touch Tare Operation

OPERATION

1. Starting in the Weighing mode.
2. Put tare w eight on the platter.
3. Press **[⅋T↗] TARE** Key.
4. Put weighing item on the platter.
5. Remove the all item from platter.
6. Press **[⅋T↗] TARE** Key. To clear tare value.

NOTE : THE ABOVE EXAMPLE IS BASED ON " NO AUTO TARE CLEAR ". (SPEC10 BIT1=0)

3.2.2. Digital Tare Operation

OPERATION

1. Starting in the Weighing mode.
2. Press **[↗] SHIFT** key, Entry tare setting mode. Right digit is sparking
3. Press **[↗] SHIFT** & **[≈] INC** key to change tare value
4. Press **[⅋T↗] TARE** key. Set tare value
5. Press **[⅋T↗] TARE** key. Clear tare value

NOTE : THIS FUNCTION ONLY CAN BE AVAILABLE WHEN SPEC10 BIT2=1.

3.0. OPERATION

3.3. Gross Weight and Net Weight Convert Operation

OPERATION

1. Starting in the Weighing mode.
2. Place container on the platter (eg.0.6000kg)
3. Press **[TARE] TARE** key
4. Press **[INC] INC** key to change to Gross Weight display
5. Remove the container from platter.
6. Press **[INC] INC** key to change to Net Weight display.
7. Press **[TARE] TARE** key to clear tare.

NOTE : THE FUNCTION CAN ONLY WORK ON THE CONDITION THAT SPEC11 BIT0=1. ABOVE FUNCTION AND WEIGHT UNIT CHANGING FUNCTION CAN NOT WORK AT THE SAME TIME.

3.4. Weight Unit Change

OPERATION

1. Starting in the Weighing mode.
2. Put item on the platter (eg.0.6000kg)
3. Press **[INC] INC** key to change to pound.
4. Press **[INC] INC** key to change to ounce.
5. Press **[INC] INC** key to change to basic unit.
6. Remove the item from platter.

NOTE : THIS FUNCTION IS AVAILABLE ONLY WHEN SPEC15=0100 OR SPEC15=1100.

3.5. Counting Operation

OPERATION

1. Starting in the Weighing mode.	
2. Press **[MODE] MODE** key	SAMPLE COUNT DISPLAY 32 PCS
3. Press **[SHIFT] SHIFT** key to select change position	DIGITAL 2 IS BY SELECTED
4. Press **[INC] INC** key to select the digit need changing.	SAMPLE COUNT SET 52 PCS
5. Press **[ENTER] ENTER** key to set sample count.	TEST SAMPLE WEIGHT
6. Put 0.6000kg item on the platter.	PUT SAMPLE ON THE PLATTER
7. Press **[ENTER] ENTER** key	IN COUNT MODE
8. Press **[MODE] MODE** key.	EXIT FROM COUNT MODE

3.0. OPERATION

3.6.1. SET POINT SETTING (UNDER THE CONDITION THAT SPEC8 BIT0=1)

OPERATION

1. Starting in the Weighing mode.
2. Press **[ ] MODE** key twice to enter set point programming mode.
3. Press **[ ] ENTER** key to view or change setpoint 1 value
4. Press **[ ] SHIFT** & **[ ] INC** key to set to appropriate value.
5. Press **[ ] ENTER** key to store set point setting.
6. Press **[ ] ENTER** key to view or change setpoint 2 value
7. Press **[ ] SHIFT** & **[ ] INC** key to set to appropriate value.
8. Press **[ ] ENTER** key to store set point setting.
9. Press **[ ] ENTER** key to view or change setpoint 3 value
10. Press **[ ] SHIFT** & **[ ] INC** key to set to appropriate value.
11. Press **[ ] ENTER** key to store set point setting.
12. Press **[ ] ENTER** key to view or change setpoint 4 value
13. Press **[ ] SHIFT** & **[ ] INC** key to set to appropriate value.
14. Press **[ ] ENTER** key to store set point setting and return to weighing mode

NOTE:

1) When setting setpoint 1,S1 indicator is light.
2) When setting setpoint 2,S2 indicator is light.
3) When setting setpoint 3,S3 indicator is light.
4) When setting setpoint 4,S4 indicator is light.

INDICATION OF WEIGHT ACHIEVEMENT TO SETPOINT VALUES

When the weight exceeds setpoint 1 value the indicator S1 is light.

When the weight exceeds setpoint 2 value the indicator S1 and S2 are light.

When the weight exceeds setpoint 3 value the indicator S1,S2 and S3 are light.

When the weight exceeds setpoint 4 value the indicator S1,S2, S3 and S4 are light.

3.0. OPERATION

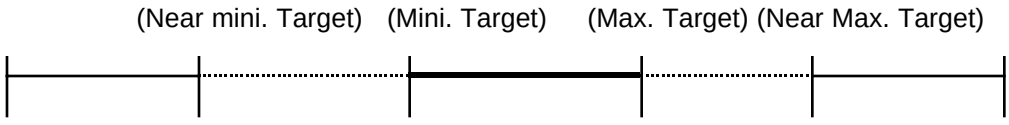
3.6.2. SETPOINT ALARM FUNCTION

This function has two methods. ***FILLING*** method and ***CHECK WEIGHING method***.

- ***METHOD 1.FILLING APPRICATION***

1. Press **[ ] ENTER** key until SAF [ ] indicator lamp is lit..

2. Operator fills the item on the platter up to the target range. The target range is determined with 2 set-point (set-point 2 and set-point 3) the continuous fast alarm alert. Operator auditory when weight is within the target weighing range. Set-point 1 and set-point 2 may be programmer for fine adjustment range. The intermediate alarm operator when the weight is closed to each target.



Weight Zero Set-point 1 Set-point 2 Set-point 3 Set-point 4

Full Capacity

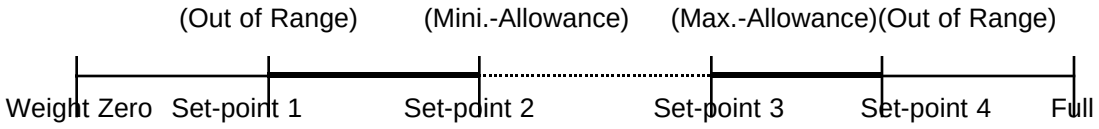
Note: ····· continuous slow alarm ——— continuous fast alarm

3.0. OPERATION

3.6.3. Method 2.Check Weighing Application.

1. Press **[ ] ENTER** key until SAC [ ] indicator lamp is lit

2. Operator places item on the platter and check (confirm) whether the weight of the item is within allowance error range. The allowable error range is determined with 2 set-points (set-point 2 and set-point 3) Usually, set-point 1 is set to set-point 2,and set-point 3 is set to set-point 4.The continuous fast alarm alerts operator when the weight is out of the allowable error range.



Note: ····· continuous slow alarm ——— continuous fast alarm

Ex. Set-point 1=0.0100kg,Setpoint 2=0.0200kg,Setpoint 3=0.0350kg,setpoint 4=0.0550kg

OPERATION

1. Starting in the Weighing mode.
2. Press **[ ] ENTER** key…… (SETUP FILLING APPLICATION IS ON)
3. Put 0.0150kg item on the platter….. (ALARM START IS FAST)
4. Put 0.0150kg more item on the platter…..(ALARM START IS SLOW)
5. Put 0.0150kg more item on the platter…….(ALARM START IS FAST)
6. Put 0.0150kg more item on the platter…….(ALARM OFF)
7. Remove the item from the platter

OPERATION

Press **[ ] ENTER** key……(SET CHECK WEIGHT APPLICATION MODE)
Put 0.0150kg item on the platter…….(ALARM START IS FAST)
Put 0.0150kg more item on the platter…..(ALARM START IS SLOW)
Put 0.0150kg more item on the platter……(ALARM START IS FAST)
Put 0.0150kg more item on the platter……(ALARM OFF)
Remove the item from the platter

Press **[✓] ENTER** key…..(SET CHECK WEIGHT APPLICATION MODE)

4.0 MAINTENANCE

4.1. System Display Information

NO.	INFORMATION	DISPLAY		SOLUTION
1	SPEC Setting error SPEC(14,15)	E r r o r -	0	Change SPEC 14 BIT0,1,2 and SPEC15 Setting Value
2	When calibration full weight the weight is not enough.	E r r - L O		Change the weight.
3	When calibration zero the zero is out of range	E r r - O -		Remove the weight on the platter.
4	Counting Mask.	C O N L O		Press **[REZERO]** key.
5	Counting overflow	C O N O. F		Change weight.
6	Weight mask	L O		Press **[REZERO]** key.
7	Weight Overflow	O. F		Change weight.

NOTE : The information of NO.6 can be displayed when the Weight Mask is set enable.
(SPEC17 BIT0,1=01 or SPEC17 BIT0,1=10)

4.2. Check the Status of Span Switch

OPERATION

1. Starting in the Weighing mode.
2. Press and hold **[⓻0⓺] REZERO** key, and while holding the **[⓻0⓺] REZERO** key, press **[↻] MODE** key**, [↗] SHIFT** key**, [≈] INC** key.
3. the Display will show Span Switch On Or
   Span Switch Off
4. After 6 seconds, return to weighing mode.

4.0 MAINTENANCE

4.3. Internal Count and A/D count Display

NOTE : If SPEC13 BIT3=0, It can only work when the Span Switch is enable
If SPEC13 BIT3=1, It can be accessed at anytime.

OPERATION

1. Starting in the Weighing mode.
2. Press **[ ] ENTER** key
3. Press and hold **[0] REZERO** key, and while holding **[0] REZERO** key, press **[] SHIFT** key, **[] INC** key, **[] INC** key. To enter Internal count display
4. Press **[] INC** key, To Change to A/D count
5. Press **[] INC** key. A/D count (processed)
6. Press **[] INC** key. To Change to A/D count
7. Press **[T] TARE]** key. Return to weighing mode.

4.4. Span Adjustment (Calibration)

NOTE: It can only work when Span Switch is enable.

OPERATION

1. Starting in the Weighing mode.
2. Press **[SPAN]** switch
3. To enter Calibration Mode; Press and hold **[0] REZERO** key, and while holding**[0] REZERO** key, press **[] SHIFT** key, **[T] TARE** key, **[T] TARE** key
4. Enter capacity weight; Press **[ ] ENTER** key
5. Press **[] SHIFT** key, to select the digit that needs to be changed.
6. Press **[] INC** key to change the selected digit's value.
7. Press **[ ] ENTER** key to confirm. No weight should be on scale.
8. Press **[ ] ENTER** key to calibrate zero point. No weight should be on scale.
9. Place weight on the platter.
10. Press **[ ] ENTER** key to calibrate span

Return to weighing mode.

4.0 MAINTENANCE

4.5. Customer Specification Setting

NOTE: Customer Specification can be accessed from the weighing mode.

OPERATION

1. Starting in the Weighing mode.
2. Press and hold **[❼0❻] REZERO** key, and while holding **[❼0❻] REZERO** key, press **[↗] SHIFT** key, **[↗] SHIFT** key, **[↗] SHIFT** key.
3. Press **[↗] SHIFT** key to select the digit that needs to be changed
4. Press **[≈] INC** key to change the selected digit's value
5. Press **[☜] ENTER** key. To store the setting value
6. Press **[☝] MODE** key to change the SPEC number
7. Repeat above step to change another SPEC setting.
8. Press **[⅋T↗] TARE** key to return to weighing mode

4.5.1 Customer Specification * **V1.04**

SPEC	BIT 3	BIT 2	BIT 1	BIT 0
	Power Auto-Off Function			
00 **0 0 0 0**	0000: No Auto-Off 0001: 2 minutes 0010: 4 minutes 0011: 6 minutes	0100: 8 minutes 0101: 10 minutes 0110: 12 minutes 0111: 14 minutes	1000: 16 minutes 1001: 18 minutes 1010: 20 minutes 1011: 22 minutes	1100: 24 minutes 1101: 26 minutes 1110: 28 minutes 1111: 30 minutes
01 **1 1 0 0**	**Zero Tracking** 0: Inhibit **1: Allow**	**Back-light Operation Select** 00: No back-light 01: Manual **10: Automatically** 11: Keep bright		**Battery Indicator** **0: Disable** 1: Enable
02 1 0 0 1	Weight Stable Lamp 0: Disable 1: Enable	RS-232 Serial Port 0: Disable 1: Enable	Communication With Stable Signal 0: No 1: Yes	Text With Header Code 0: Without 0: With
03 1 10 0	Communication Method *V1.04 00: Steam Output 10: Manual Command 01: Weight Stable 11: External Command		Not Used	
04 1 0 1 0	RS-232C Baud Rate Selection V1.04 000: 300 bps 011: 2400 bps 110: 19200 bps 001: 600 bps 100: 4800 bps 111: 9600 bps 010: 1200 bps 101: 9600 bps			Communication Command Selection 0: ACK (06H) 1: A or a (41H or 61H)
05 0 0 0 0	Not Used			
06 1 0 0 _	Set Point Alarm 0: Disable 1: Enable	Not Used		Basic Weight Unit 0: kg 1: g

Note: Please set the items of Not Used as 0. RS232C No parity, Stop Bit = 1Bit, Data Length = 8Bit

4.6. Weight and Measurement Specification Setting

NOTE : It can only work when the Span Switch is enable.

OPERATION

1. Starting in the Weighing mode.
2. Press **[SPAN]** switch

To enter W&M SPEC setting mode

3. Press and hold **[➐0➏] REZERO** key, and while holding **[➐0➏] REZERO** key, press **[↗] SHIFT** key, **[⇝] INC** key, **[↗] SHIFT** key.
4. Press **[↗] SHIFT** key to select the digit that needs to be changed.
5. Press **[⇝] INC** key to change the selected digit's value
6. Press **[☜] ENTER** key To store the setting value
7. Press **[◔] MODE** key to change the SPEC number
8. Repeat the step above to change another SPEC value
9. Press **[Ⓨ₀T↗] TARE** key to return to weighing mode

4.6.1. Weight and Measurement Specification *V1.04

SPEC	BIT 3	BIT 2	BIT 1	BIT 0
07 **1 0 0 0**	Manual Re-Zero **0: Inhibit** 1: Allow	**A/D Zero Range** **0: Standard (Within 30% F.S.)** 1: Not standard (Out of F.S.)	**A/D Filter Speed** **00: Standard** 01: Low (Higher speed display) 10: Medium 11: Fast (Lower speed display)	
08 **0 0 01**	Not Used	**Comma Display** 0: No **1: Yes**	**Tare Memory** 0: Inhibit **1: Allow**	**Set Point Output** 0: Inhibit **1: Allow**
09 **1 1 1 1**	**Over Range Start** **0: Inhibit** 1: Allow	**Re-Zero Range** **0: Limited** 1: Not Limited	**Re-Zero & Start Range** 00: +/- 2% F.S. 10: +/- 5% F.S. 01: +/- 3% F.S. **11: +/- 10% F.S.**	
10 **0 1 1 1**	**Tare Range** **0: 50% F.S.** 1: 5% F.S.	**Digital Tare** 0: Inhibit **1: Allow**	**Tare Auto-Clear When G. W. >21d & N. W. >5d** 0: Inhibit **1: Allow**	**Manual Tare Clear** **0: No** 1: Yes
11 **1 1 1 0**	**Auto Re-Zero Setting** **0: Inhibit** 1: Allow	**Tare Clear when Re-Zero** 0: No **1: Yes**	**Counting Function** 0: No **1: Yes**	**[Shift] Key Define** **0: Weight unit Conversion (spec 3 must be 1100)** 1: Gross/Net Toggle

SPEC	BIT 3	BIT 2	BIT 1	BIT 0
12 **0 0 0 0**	**Fast Zero-Tracking** **0: Inhibit** 1: Allow	**Fast Zero-Tracking Speed Selection** 000: 0.25 d/s 010: 0.75 d/s 100: 1.25 d/s 110: 1.75 d/s **001: 0.50 d/s** 011: 1.00 d/s 101: 1.50 d/s 111: 2.00 d/s		
13 **0** _ _ _	**IR Mode Protected By Span SW** **0: No** 1: Yes	**Decimal Point Position for Weight Display** 000: No Decimal Point 011: 4th digit (0.000) 001: 2nd digit (0.0) 100: 5th digit (0.0000) **010: 3rd digit (0.00)** 101: 6th digit (0.00000)		
14 **0** _ _ _	**SPAN SW Password Access** **0: Inhibit**1: Allow	Selection of Display Increment **000: 1** 001: 2 010: 5 011: 10 100: 20 101: 50 110: 100 111: Not Used		
15 _ _ _ _	**Display Resolution** 0000: 1000d **0100: 3000d** 1000: 10000d 1100: 30000d 0001: 1500d 0101: 5000d 1001: 15000d 1101~1111: Not Used 0010: 2000d 0110: 6000d 1010: 20000d 0011: 2500d 0111: 7500d 1011: 25000d			
16 _ _ _ _	**Load-Cell Sensitivity Selection (mV/V)** 0000: 3.46 ~ 4.00 0101: 1.69 ~ 1.95 1010: 0.82 ~ 0.95 1111: 0.40 ~ 0.46 0001: 3.00 ~ 3.46 0110: 1.46 ~ 1.69 **1011: 0.71 ~ 0.82** 0010: 2.59 ~ 3.00 0111: 1.27 ~ 1.46 1100: 0.61 ~ 0.71 0011: 2.25 ~ 2.59 1000: 1.09 ~ 1.27 1101: 0.53 ~ 0.61 0100: 1.95 ~ 2.25 1001: 0.95 ~ 1.09* 1110: 0.46 ~ 0.53			
17 **1 1 0 0**	**Re-Zero Range** 00: +/- 2% F.S. 01: +/- 5% F.S. **10: +/- 10% F.S.** 11: No limited		**Negative Weight Display** **00: Minus Weight** 01: Minus Gross > 9d, display mask 10: Minus Net > 9d, display mask 11: Not used	
18 **0 0 0 0**	**Not Used**	**Not Used**	**Not Used**	**Not Used**
19 **0 0 0 0**	**Not Used**	**Weight Unit ct Conversion *** V1.04 0: Enable **1: Disable**	**Weight Unit oz Conversion *** V1.04 0: Enable **1: Disable**	**Weight Unit lb Conversion *** V1.04 0: Enable **1: Disable**

Note: Please set Not Used items as 0

F.S. means Full Span (Capacity Weight)

G.W. means Gross Weight, N.W. means Net Weight

Highest Display Resolution: 60.000Kg: 30000d, 30.000Kg: 30000d

15.000Kg: 15000d, 6.000Kg: 6000d