05/2020

AVAWEIGH
COMMERCIAL SCALES

USER MANUAL

Digital BMI Physician Scale w/ Height Rod

334MSD600

600 lb.

TABLE OF CONTENTS

GENERAL INFORMATION

- This is a Digital Physician Weighing Scale with Body Mass Index (BMI) readout.
- It is an accurate electronic device with advanced design and stable performance.
- It is designed to measure the weight of a person and compute the BMI index once the known height of a person is entered via the Indicator

SAFETY INFORMATION

- Do not dismantle the weighing machine without following the necessary instructions.
- Do not jump while standing on the platform. This may damage the sensor inside.
- Do not move the weighing machine violently and abruptly. It is recommended to move and put down the weighing machine gently.
- It is suggested to wipe the stains with soft cloth soaked with detergent and to wipe later with soft cloth too. Do not use organic solutions and boiled water to wipe the stains. Do not use water for cleaning.
- Keep the weighing machine in a dry and clean environment. Do not expose it outdoor or use it in locations near fire, under direct sunshine or with high temperature.
- When lifting the height meter, it is suggested to pull it straight along the pipe without using excessive force.

SPECIFICATIONS

	334MSD600
MAXIMUM CAPACITY	600 lb. / 300kg
MINIMUM WEIGHT	2 lb. / 1 kg
SCALE DIVISION	0.1 lb. / 0.05kg
WEIGHING UNITS	lb. / kg
HEIGHT RANGE	24" - 83" (60cm - 212cm)
DIVISION OF HEIGHT MEASUREMENT	Entry via keypad (0.5" / 1 cm)
DISPLAY	LED Display
INTERFACE	RS232
SIZE OF PLATFORM (L X W)	10.83" x 14.76" (291mm x 375mm)
TOWER HEIGHT	51.5" (1308mm)
OVERALL DIMENSIONS (LXWXH)	11.46" x 24.29" x 51.54" (291mm x 617mm x 1309mm)
NET WEIGHT	31 lb. / 14kg
TEMPERATURE FOR USE	41 - 104°F (5 - 40°C)
HUMIDITY FOR USE	<85% RH
POWER	12vDC 500mA adapter
BATTERY	Internal, re-chargeable 6V 4Ah battery

UNPACKING & SETUP

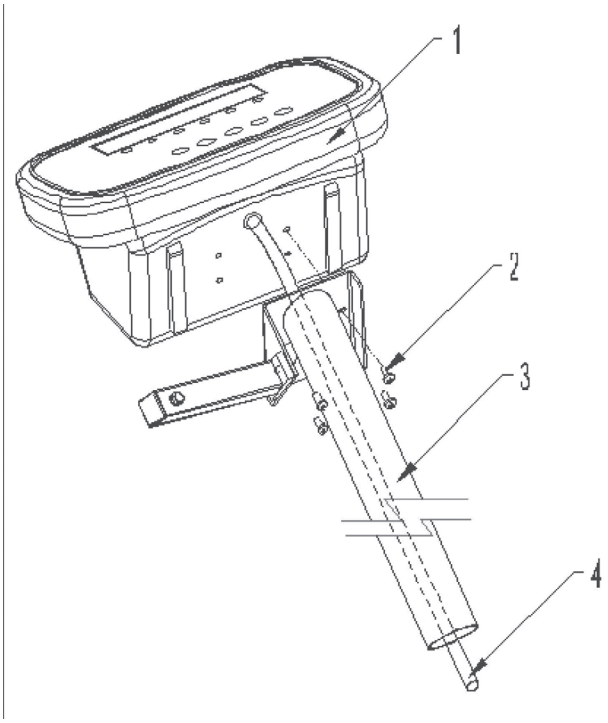
PACKING LIST

- Indicator
- Height Rod
- Manual
- Pillar
- 12V 500mA Adapter

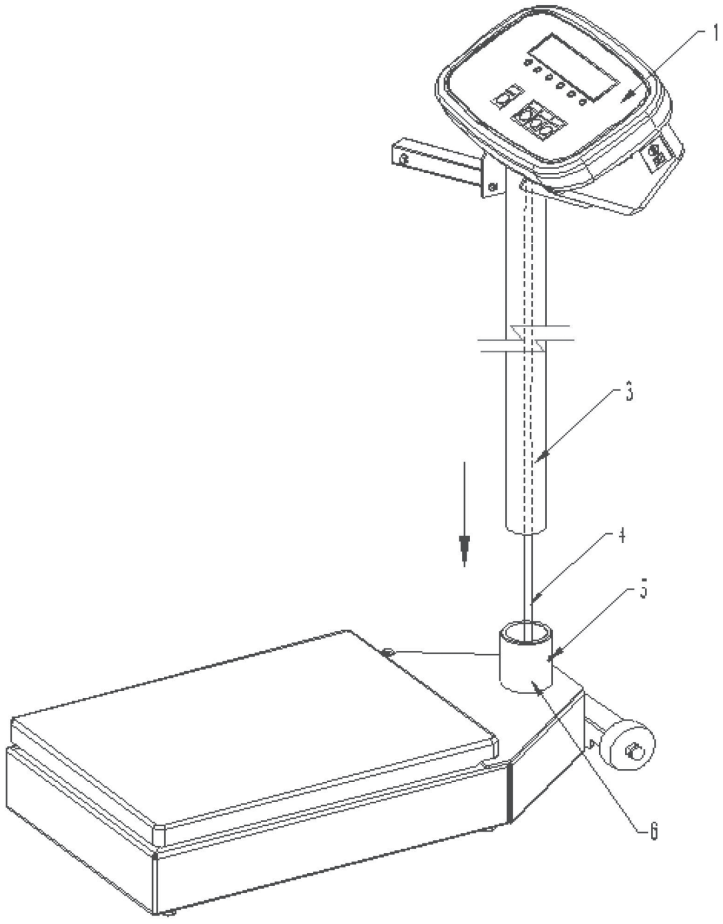
TOOLS REQUIRED

- Philips Head Screwdriver (Not Supplied)
- Small Hex Allen Wrench (Included)
- Large Hex Allen Wrench (Included)

INSTALLATION PROCEDURE

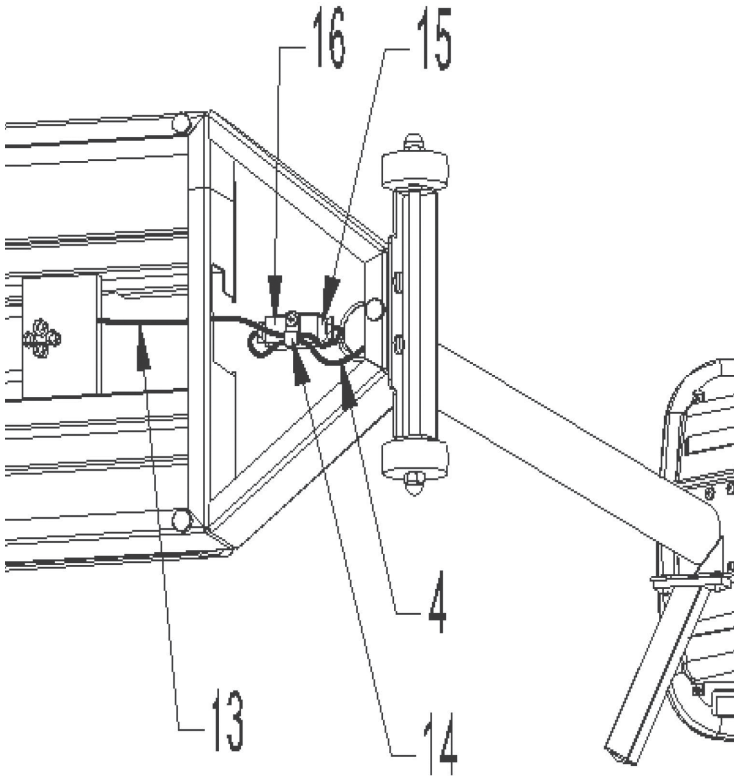


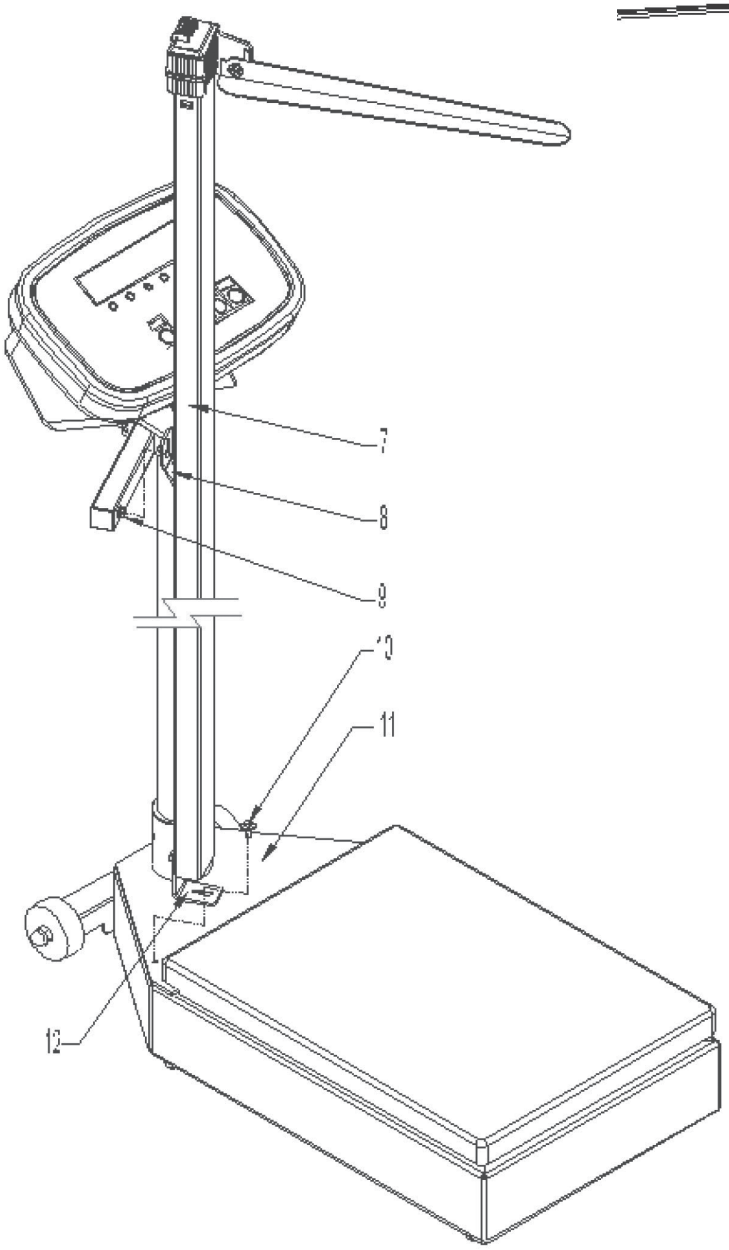
1. Locate the 4 screws (2).
2. Place the cable (4) through the pillar (3).
3. Insert the 4 screws (2) through the holes on the pillar bracket and secure the bracket to the indicator (1).
4. Make sure the screws are securely tightened.



5. Place the cable (4) into the tube support (6) on the scale base.
6. Insert the pillar (3) into the tube support (6).
7. Rotate the pillar to position the indicator (1) in the direction desired, and then secure using the (2) screws (5) into the fixing tube (6).

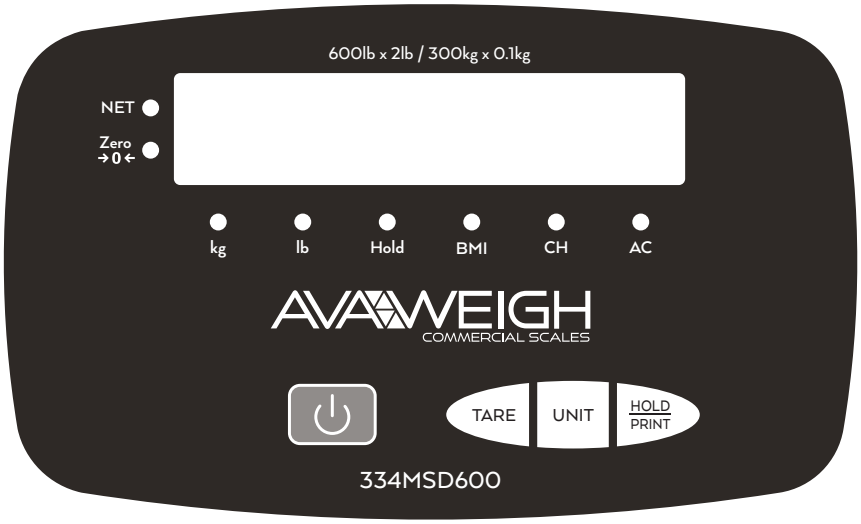
8. Locate the load cell cable (13) ready for connection.
9. Place the indicator cable (4) and the load cell cable (13) together near the hole on the base (16).
10. Plug the two connectors (15) together.
11. Position the connector inside the base (16).
12. The cables should be fixed to the base using the clip (14) provided.





13. Locate the fixing bolt & washer (10) used to secure the height rod to the scale base (11).
14. Locate the height rod (7) onto the fixing points (9) of the upper & lower brackets (8) & (12).
13. Secure the bolt & washer (10) to the bracket on the base.
14. Tighten the bolt (9) on the upper bracket.

INDICATOR DISPLAY



CONTROLS & FUNCTIONS

KEY	FUNCTIONS
POWER	To turn the scale on or off.
	To zero the scale if the display drifts from zero.
TARE	To tare the scale, if necessary.
	Accept settings as required.
UNIT	Toggle weight unit between Lb. & kg and to select the BMI function.
	Move active digit to the right when required.
HOLD/PRINT	Locks the reading even if the person to be weighed is moving.
	Prints via the RS232 interface.
	Increase value or settings when required.

DISPLAY	FUNCTIONS
Kg	Indicates when the scale is weighing in Kilograms.
Lb	Indicates when the scale is weighing in Pounds.
Hold	Indicates when the scale has held the weight reading shown on the display. It will flash until it locks into the stable reading when it will then remain on for a preset time when it has held the displayed reading.
BMI	Indicates when the scale is displaying the Body Mass Index value.
CH	The charge light will be on when the battery is recharging.
AC	This indicates when the scale is being used with the AC adapter.
Zero	This indicator will be displayed in the left corner when the scale reaches zero.
NET	The Net weight is displayed, Tare weight is at zero.

DISPLAY CHARACTERS

SYMBOL	DIGIT	SYMBOL	DIGIT	SYMBOL	DIGIT
0		A		N	
1		B		O	
2		C		P	
3		D		Q	
4		E		R	
5		F		S	
6		G		T	
7		H		U	
8		I		V	
9		J		W	
		K		X	
		L		Y	
		M		Z	

OPERATIONS & SETTINGS

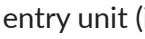
WEIGHING

1. Position the Physician Scale on an even floor and press the **ON/OFF** key.
2. The instrument performs a self-test after which it is ready for operation.
3. Press the **ON/OFF** key and the machine switches off.
4. The person to be weighed can sit on to the chair once the scale shows 0.0 on the display. The weight will be display in Kg. or lb. depending on the units chosen by the user.
5. If the weighing value is to be tared press the tare key to remove the weight value from the display.
6. Press the **UNIT** key for changing the weighing unit to kg or lb. The LED will indicate the chosen weighing unit.
7. Overload display: When “FULL” appears on the display, it shows that the load on the chair is over the maximum capacity. Under these circumstances, it is necessary to reduce the load otherwise the sensor or the chair will be damaged.
8. Hold Function: To lock the weighing result, press the **PRINT/HOLD** key. The LED will flash until a stable reading has been obtained and then it will light up constantly. The weight will be displayed until the hold time has expired (see Sec 6.0) or to manually release the function, press the **PRINT/HOLD** key again.
9. Print Function: To send the weighing result to a printer or computer press the **PRINT/HOLD** key when the **PRINT/HOLD** key has been set up in the parameter section to work as print function.

MEASURING HEIGHT

1. While measuring the height, it is necessary to pull up the measuring board at a right angle with the inside tube.
2. When the tube is pulled out straight, it is sufficient to measure the height from 24"-45.5" / 60-115cm. The number can be obtained upon the conjoint place where the upper part of middle tube screw meets with the inside tube scale.
3. Further, if the middle tube is pulled out straight, it is possible to measure the height from 45.5"- 83" / 115-212cm. The reading can be obtained at the conjoint place where the upper part of outside tube screw meets with the middle tube scale.

MEASURING BMI (BODY MASS INDEX)

1. Once the height has been determined it is possible to enter the height reading into the display ready for the scale to compute the BMI.
2. Press and hold the **UNIT/BMI** key to enter the BMI mode. The display will show the last height value used,  or  depending on which weighing unit you are currently using.
3. The height entry unit (in. or cm) will be flashing to show you which unit you are currently in, use the Up arrow key to change the height entry unit between in. to cm as required
4. Enter your height using the arrow keys, the **PRINT/HOLD** will increment the flashing digit, the right arrow, the **UNIT/BMI** key, will move the flashing digit to the adjacent digit.
5. Press the **TARE** key to confirm the value.
6. The display will now show the BMI based on the current weight on the scale and the height entered.
7. Press the **UNIT/BMI** key to exit the BMI mode and return to normal weighing.
8. The Hold function will work as described above whilst in the BMI mode.

CALIBRATION

Before calibrating the scale, you should ensure that you have a suitable known weight for calibration.

1. When in normal weighing mode with the scale at zero press and hold down **TARE** and **ON/OFF** keys to enter the calibration mode.
2. If the calibration switch is in the off position on the main PCB inside the scale, the indicator will show CAL oFF and then exit this mode. If the indicator shows CAL-28, the scale is ready for calibration.
3. When the indicator shows CAL-28, press the **TARE** key to confirm and go to next step, or press the **ON/OFF** key to exit the calibration mode.
4. When 0.0 is displayed the scale will begin to calibrate the scale's zero-point. Ensure that there is no load or weight on the scale's chair. Press the **TARE** key to confirm, or press the **ON/OFF** key to exit this mode.
5. A few seconds after the **TARE** key has been pressed in step 4 the scale will show 300.0 and the kg LED, or 600.0 and the lb LED depending on which unit you chosen, this is the default calibration weight from the factory. Press the **UNIT** key to select the calibration weight unit that you want to calibrate in. Press the **ON/OFF** key to exit the calibration mode at this point or press the **PRINT/HOLD** key to choose a different calibration weight value (50kg, 100kg, 150kg, 200kg, 250kg, 300kg or 100lb, 200lb, 300lb, 400lb, 500lb, 600lb); Then put on the weight that you selected and press the **TARE** key to confirm the chosen standard weight that was selected earlier. The displayed data will flash on the display and if the scale accepts the calibration data it will calculate and store the information into the EEPROM. If an error has occurred, the scale will display CAL Er and return back to step 4 for re-calibration. If the loaded weight is not within the range of 95% to 105% of the weight value you selected, the scale will not calibrate but display CAL Er and return back to step 4 for re-calibration.)
6. Check the calibration by putting the weight that you calibrated at back on the scale, if it is off repeat the calibration process again.

USER PARAMETERS

This indicator has 4 parameter settings that can be selected.

1. When the scale is in normal weighing mode, press and hold down the **ON/OFF** key and the **UNIT** key for 3 seconds until 'Setup' is shown on the display.
2. When in the SETUP mode, press the **PRINT/HOLD** key to change the flashing digits, and **TARE** key to confirm the flashing digits and move to the next parameter setting. Press the **ON/OFF** key to exit the set up mode.
3. Parameters setting summary:

PARAMETER	X/XY	FACTORY SET	SETTING
A.o.t **AUTO-OFF TIME**	00-15	05	00 = No AUTO-OFF
			01-15 Minutes before AUTO-OFF
P.H. **PRINT/HOLD FUNCTIONS**	0, 1, 2	1	0 = Only PRINT Function
			1 = Only HOLD Function
			2 = Both HOLD & PRINT Function (<3 Seconds = PRINT, >3 Seconds = HOLD)
H.t **HOLD TIME**	0-4	0	0 = No Time Limit
			1 = 10 Seconds
			2 = 30 Seconds
			3 = 60 Seconds
			4 = 120 Seconds
b.F. **RS232 FUNCTIONS**	0-3	0	0 = No RS232 Function
			1 = Continuously outputs display data
			2 = Output display data when PRINT pressed
			3 = Bi-directional communication (the scale receives & executes commands from the HOST device)

RS232 COMMUNICATIONS

INTERFACE PARAMETERS

- RS-232 output of weighing data
- ASCII code
- 9600 Baud rate (fixed)
- 1 start bit, 8 data bits,1 stop bit
- No Parity

CONNECTION DETAILS

- Connector: 9 pin d-subminiature socket
- Pin 2: Output
- Pin 3: Input
- Pin 5: Signal Ground

1. **RS-232 connection between the Scale and the Host:**

   DB9 Female
   RXD Pin 3
   TXD Pin 2
   GND Pin 5
   NOTE: Pins 1,4,6,7,8 & 9 are not connected.
   NOTE: The RS232 function will not operate if PH has been set to 0 or 2. (See User Parameters on Page 7.)

2. **RS232 Function Parameter Settings (See User Parameters on Page 7)**

   0 No RS232 function. It will not transmit or receive any data although the scale is equipped with RS232. The RS232 function can be only activated when scale is in normal weighing mode.

   1 Continuous output of the current displayed reading and unit, and it does not receive any data. The output format is one of the below:

   <LF>< reading, minus, decimal point, weight unit>GR<CR><EXT>
   <LF>< reading, minus, decimal point, weight unit>NT<CR><EXT>

   2 Manually outputs display data when PRINT is pressed. The output format is one of the below:

   <LF>< reading, minus, decimal point, weight unit>GR<CR><EXT>
   <LF>< reading, minus, decimal point, weight unit>NT<CR><EXT>

   3 The baud rate and data format are fixed with responses to serial commands being within 300 milliseconds. One second should be adequate for use as a time-out value by remote device.

3. **Weight Field**

   The length of the weight field will be 7 digit weight data, one for minus sign, one for decimal point, two for measure unit (e.g. “lb”, “kg”). Units of measure abbreviations are always lower case.

   If the weight is overcapacity, the scale will return nine ‘^’ characters (the field of minus sign, decimal point, weight data is filled by ‘^’).

   If the weight is under capacity, it will return nine ‘-’ characters (the field of minus sign, decimal point, and weight data is filled by ‘_’).

   If the zero point has an error, it will return nine ‘-’ characters.

   The character will be ‘-’ for negative weight or a space character for positive weight. Minus sign follows after the first digit.

   Useless leading zeroes before digits are suppressed.

4. **Key to Symbols Used**

   <LF> Line Feed character (hex 0AH)
   <CR> Carriage Return character (hex 0DH)
   <ETX> End of Text character (hex 03)
   <SP> Space (hex 20H)
   H1H2H3 Three status bytes. Refer to Status Byte Table on page 9.
   <p> Polarity character including minus sign for negative weight and a space character for positive weight
   W1-W7 Weight data
   <dp> Decimal point
   U1U2 Measure units, kg, lb

5. Commands and Response

Command: W<CR> (57h 0dh)
Response:
<LF>^^^^^^u1u2<CR><LF>H1H2H3<CR><ETX>---over capacity
<LF>_____u1u2<CR><LF> H1H2H3 <CR><ETX>---under capacity
<LF>---------u1u2<CR><LF> H1H2H3<CR><ETX>---zero-point error
< L F > < p > w 1 w 2 w 3 w 4 w 5 w 6 < d p > w 7 u 1 u 2 < C R > < L F > H 1 H 2 H 3 < C R > <ETX> ---Scale is stable, and the current weight unit is kg or lb. With or without decimal point and the position is as per the P9 setting and current unit.

Command: S<CR> (53h 0dh)
Response: <LF> H1H2H3<CR><ETX>

Command: Z<CR> (5ah 0dh)
Response: Zero function is activated and it returns to current scale status, just like pressing **ZERO/ON/OFF** key:
<LF> H1H2H3<CR><ETX>
If ZERO function cannot be activated, it will return to current scale status.

Command: T<CR> (54h 0dh)
Response: TARE function is activated, and then returns scale status, just like pressing **TARE** key:
<LF> H1H2H3<CR><ETX>
If TARE function cannot be activated, it will return to current scale status.

Command: U<CR> (55h 0dh)
Response: Changes units of measure and return scale status with new units, just like pressing **UNIT** key. The new measure unit should be allowed to use as per P11 setting.
<LF>u1u2<CR><LF> H1H2H3<CR><ETX>

Command: X<CR> (58h 0dh)
Response: power off the scale, just like pressing the **ON/OFF** key to turn off the scale.

Command: all others
Response: Unrecognized command <LF>?<CR><ETX>

BIT	BYTE 1 (H1)	BYTE 2 (H2)	BYTE 3 (H3)
0	0 = Stable	0 = Not Under Capacity	01 = Normal Work Mode
	1 = Not Stable	1 = Under Capacity	10 = Hold Work Mode
1	0 = Not at Zero Point	0 = Not Over Capacity	00 = Not Define
	1 = At Zero Point	1 = Over Capacity	11 = Not Define
2	Always 0	Always 0	0 = Gross Weight
			1 = Net Weight
3	0 = eeprom OK	Always 0	Always 0
	1 = eeprom Error		
4	Always 1	Always 1	Always 1
5	Always 1	Always 1	Always 1
6	Always 0	Always 1	Always 0
7	Parity	Parity	Parity

ERROR MESSAGES

ERROR	CAUSE
	Zero Point is over the setting range
	Zero Point is below the setting range
	ADC is over maximum range
	ADC is below minimum range
	EEPROM Error
	Calibration Error
	The capacity will be displayed
	Battery voltage or input power is below 5.6V
	The capacity has been exceeded by the person standing on the scale