Model MS 1000-LCD

Operator Manual

AWT35-100089 Rev AD, Software V01.2

TABLE OF CONTENTS

Manual revision history

Current Issue	Date Created	Details of Changes
Rev AA	Sep 2021	New
Rev AB	Nov 2021	Minor changes
Rev AC	March 2022	Hold modes
Rev AD	Dec 2025	High precision, 5000d. IP67 shear beam sensors.

1. Warnings

United States
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada
This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n' émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le Règlement sur le brouillage radioélectrique edicté par le ministère des Communications du Canada

Safe installation

THE EQUIPMENT CONTAINS NO USER SERVICEABLE COMPONENTS.
Installation and maintenance of the equipment must only be carried out by trained and authorized personnel.

Electrical installation
The mains lead must be connected to a supply outlet with a protective earth contact. The electrical supply at the socket outlet must provide over current protection of an appropriate rating.
For your protection all mains (110V or 230V) equipment used out of doors or in wet or damp conditions should be supplied from a correctly fused source and protected by an approved ground fault protection device (RCD, GFCI etc.)
IF IN DOUBT SEEK ADVICE FROM A QUALIFIED ELECTRICIAN.

Routine maintenance
To avoid the possibility of electric shock or damage to the machine, always switch off the machine and isolate from the power supply before carrying out any routine maintenance.
To avoid the risk of the machine falling, where applicable, ensure that it is placed securely on a flat and level surface.

Safe use

Caution – Cleaning the indicator/weigh head
Harsh abrasives, solvents, scouring cleaners and alkaline cleaning solutions, such as washing soda, should not be used especially on the display windows. Under no circumstances should you attempt to wipe the inside of the machine.
The outside of standard products may be wiped down with a clean cloth, moistened with water containing a small amount of washing up liquid.

Training
Do not attempt to carry out any procedure on a machine unless you have received the appropriate training or read the Instruction Manual.

EMC compliance
The following may be applicable to your machine.

WARNING: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

2. Introduction

The MS1000-LCD is an electronic chair scale designed for either walking on or being wheeled on to be weighed. The platform has adjustable locking feet and a deck with built-in, front and rear ramp angles. The scale provides accurate weight with an easy-to-read LCD display, which can be easily mounted on the MS1000 guide rail and powered using the included AC/DC power adaptor (batteries not supplied).

2.1. Unpacking

Carefully take the scale out of its package, make it sure it's not damaged and all accessories are included:

- SBI 210-LCD Indicator with 10 in (25 cm) interface cable
- 9 Vdc 600 mA Power supply with plug adaptor
- MS1000 Platform with 10 ft (3 m) interface cable, guide rail and bracket
- Installation Manual and Safety Sheet

2.2. General Installation Guidelines

To get the best performance from the scale, link the platform and indicator connectors and place the MS1000 platform in a location that will not degrade its accuracy.

- Try to avoid placing the scale in direct sunlight or near air vents
- Place the scale on a level flat surface. It is not advised to place the scale near vibrating machinery
- Avoid unstable power sources. Do not use near large users of electricity.

2.2.1 Scale Installation

Refer to the Installation Manual AWT35-501586 for the handrail and indicator bracket installation instructions. Two wheels built into the side channels allow the base to be easily tilted and moved.

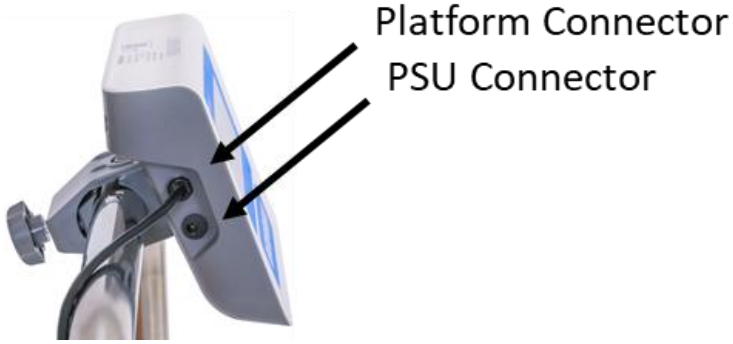
2.2.2 Levelling the Scale

Level the scale using the four adjustable feet on the bottom of the platform.

Always check the level prior to using scale.

2.3. Powering ON/OFF the Scale

With the charger plugged into the indicator, press the **ZERO/ON/OFF** key to turn the scale on.
Press and hold the **ZERO/ON/OFF** key for 5s to turn the scale off.

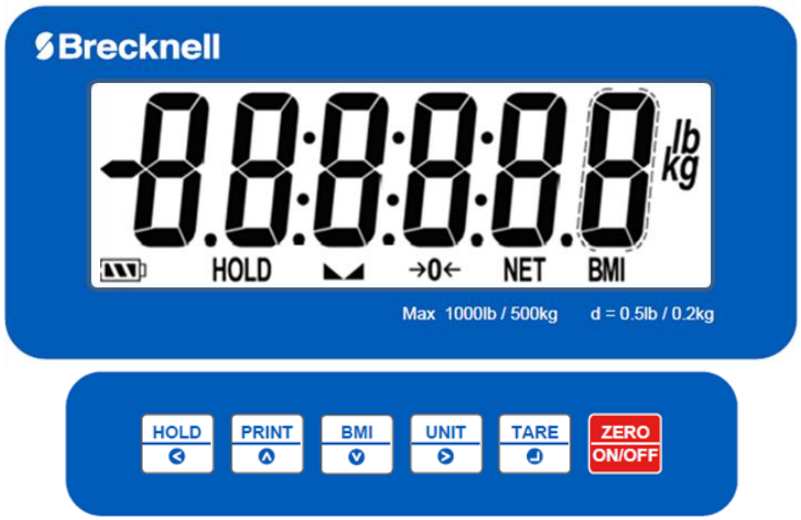


Optional: remove the battery compartment lid on the rear to insert 6x AA batteries (not included).

2.4. Error Codes

0---------	Initial zero weight over max load (default, 100% F.S.)
----------	Overload, >1004.5 lb or >501.8 kg (default, 100% F.S. + 9 divisions)
EEP.E#	Settings error #

2.5. Front Panel and Keys



Never press a key with anything but your finger. Damage to the overlay may result if sharp or rough objects are used.

2.5.1. Display Annunciators

	Display reading is stable
	Scale at Zero. Gross weight is 0, Tare is 0
NET	Indicates a Net weight. Tare is not 0.
BMI	Scale is working in BMI mode
HOLD	Scale is working in HOLD mode
lb kg	Current unit of measure
	Battery status (or AC/DC operated)

2.5.2. Operation Keys

The key functions are listed below. In menu mode, the keys have secondary functions.

	- Enters/exits the HOLD mode. - *In Menu mode:* go to previous menu screen; exit menu.
	- Sends information to a peripheral device. - *In Menu mode:* go to previous menu screen; increase / change a data value.
	- Enters the BMI mode. - *In Menu mode:* go to next menu option; decrease / change a data value.
	- Selects the unit of measure. - *In Menu mode*: select / go to next data value position.
	- Tares the scale. - *In Menu mode:* open menu option; confirm a displayed value / function / operation.
	- Zeroes the scale; turns the scale on / off. - *In Menu mode:* cancel an operation and exit from the current working mode.

3. Scale Operation

This section covers the scale operations of simple weighing, the Hold and BMI modes and other functions.

A warm-up time of 15 minutes is required to stabilize the measured values.

3.1. Simple Weighing

1. Power up the scale and zero the display, if necessary, by pressing the **ZERO/ON/OFF** key. Be sure the scale is displaying weight in your preferred unit of measure. Press the **UNIT** key, if necessary
2. Step on the scale platform and stand still

   The weight is displayed in the weight window.

3.2. Tare Weighing

To carry out a *Net* weighing, follow the steps below:

1. Power up the scale and zero the display, if necessary, by pressing the **ZERO/ON/OFF** key. Be sure the scale is displaying weight in your preferred unit of measure. Press the **UNIT** key, if necessary.
2. Place the item to be tared (e.g., wheelchair) on the scale platform

   Weight of the item is displayed in the weight window.
3. Press the **TARE** key

   The weight is tared, 0 weight is displayed and the *Net* annunciator lights.
3. Step on the scale platform and stand still

   The *Net* weight is displayed in the weight window.



To remove a tare, remove the item(s) from the scale platform and press the **TARE** key …0 weight is displayed, and the *Net* annunciator light turns off. The unit is now in gross weighing mode.

3.3. Changing Units

This scale can be used in either kg or lb units of measure. To change the unit of measure, press the **UNIT** key.

3.4. BMI Function

This function calculates the BMI index. BMI (Body Mass Index) is an index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults.

1. Power up the scale and zero the display, if necessary, by pressing the **ZERO/ON/OFF** key. Be sure the scale is displaying weight in your preferred unit of measure. Press the **UNIT** key, if necessary.
2. Step on the scale platform.
3. Press the **BMI** key to enable this function.
4. Enter the height in *centimetre (cm.)* using the ⌃ ⌄ keys or press the **UNIT** key to enter the height in *inch (in.)*.
5. Stand still and press the **TARE** key to confirm the height

   The BMI Index is displayed in the weight window.

To exit the BMI mode, step off from the scale platform and press the **ZERO/ON/OFF** key …0 weight is displayed, and the *BMI* annunciator light turns off.

3.5. Print Function (Com Ports)

The MS 1000-LCD comes as standard with one full duplex RS-232 serial port and A type USB port, designed for connection to either a PC or a serial printer using the appropriate adaptor and cable.

Open the Submenu 1 RS232 / USB in the User Menu to select and configure the Com port, print mode and, format. Default print out format MULTIPLE.

1. Power up the scale and zero the display, if necessary, by pressing the **ZERO/ON/OFF** key. Be sure the scale is displaying weight in your preferred unit of measure. Press the **UNIT** key, if necessary.
2. Step on the scale platform.
3. Press the **PRINT** key to send the data out to an external device.

3.6. Hold Function

This function can be used to freeze a displayed weight value. In *Hold* mode, the scale can capture and hold stable weights, or average an unstable value. Then, the indicator temporarily freezes (*Hold*) the value on screen for the user to view or record.
The MS 1000-LCD is featured with three hold modes: Manual, Average and Automatic (default).

The indicator provides special mode settings to accommodate weight movements in the User Menu. Open the Submenu 1 HOLD to enable this mode and change the parameter values: NLD.RNG (10 div), HLD.RNG (5 div), AVG.TIM (5 sec), STB.TIM (15 sec) accordingly.

3.6.1 Automatic Hold Mode (Default)

When this mode is activated, the scale automatically grabs and holds the weight on the display until the weight returns to zero and a new *Hold* weighing session starts.

1. Power up the scale and zero the display, if necessary, by pressing the **ZERO/ON/OFF** key. Be sure the scale is displaying weight in your preferred unit of measure. Press the **UNIT** key, if necessary.
2. Press the **HOLD** key to enable this function

   The *Hold* annunciator flashes.
3. Step on the scale

   If the weight sensed is above the *NLD.RNG* zero range (10 div = 5 lb, 2 kg) and doesn't exceed the *HLD.RNG* oscillations range (5 div = 2.5 lb, 1 kg) within the *AVG.TIM* average time (5 sec), the indicator calculates and displays the *Hold* mode weight.
   The *Hold* annunciator stops flashing.
4. Remove the item(s) from the scale platform and repeat the steps above for other *Hold* weighments.
5. Press the **HOLD** key to exit the current mode.

If the weight oscillations exceed the HLD.RNG division range value (5 div) within the STB.TIM time value (15 sec), the indicator will display STB.ER. See Hold Menu.

3.6.2. Average Hold Mode

When this mode is activated, the scale calculates accurate weight of unstable loads and holds that weight on the display until the weight returns to zero and the tare or hold button is pressed.

1. Power up the scale and zero the display, if necessary, by pressing the **ZERO/ON/OFF** key. Be sure the scale is displaying weight in your preferred unit of measure. Press the **UNIT** key, if necessary.
2. Press the **HOLD** key to enable this function

   The *Hold* annunciator flashes.
3. Step on the scale

   If the weight sensed is above the *NLD.RNG* zero range (10 div = 5 lb, 2 kg) and doesn't exceed the *HLD.RNG* oscillations range (5 div = 2.5 lb, 1 kg) within the *AVG.TIM* average time (5 sec), the indicator calculates and displays the *Hold* mode weight.
   The *Hold* annunciator stops flashing.
4. Press the **TARE** key to repeat the *Hold* weighment or the **HOLD** key to exit the current mode.
   The scale will automatically exit the *Hold* mode after the *HLD.TIM* time value (default, disabled).

If the weight oscillations exceed the HLD.RNG division range value (5 div) within the STB.TIM time value (15 sec), the indicator will display STB.ER. See Hold Menu.

3.6.3. Manual (Toggle) Hold Mode

When this mode is activated, the scale grabs the first stable weight reading holds that weight on the display until the weight returns to zero and the tare or hold button is pressed.

1. Power up the scale and zero the display, if necessary, by pressing the **ZERO/ON/OFF** key. Be sure the scale is displaying weight in your preferred unit of measure. Press the **UNIT** key, if necessary.
2. Press the **HOLD** key to enable this function

   The *Hold* annunciator flashes.
3. Step on the scale

If the weight sensed is stable for STB.TIM (15 s) and above the *NLD.RNG* zero range (10 div = 5 lb, 2 kg), the indicator displays the Hold mode weight. The *Hold* annunciator stops flashing.

4. Press the **TARE** key to repeat the *Hold* weighment or the **HOLD** key to exit the current mode.

If the weight is not stable within the STB.TIM time value (15 sec), the indicator displays STB.ER. See Hold Menu.

4. Menus

There are four menus that allow you to configure, enable, or execute specific functions or options.

- **User and Diagnostics Menu,** page 15
- **Calibration Menu,** page 16
- **Service Configuration Menu,** page 17.

4.1. User Menu

In the User Menu there are various submenus available to configure specific sections of the scale operating modes, including the print and communication settings.

In general weighing mode, press the **HOLD** and **ZERO/ON/OFF** keys. Release the keys when the "USER" message pops up to open the User Menu.
Navigate the menu using the < ^ v > keys, press the **TARE** key to confirm or the **ZERO/ON/OFF** key to cancel the operation / exit the menu.

4.1.1 User Options

USER				
SubMenu1	**SubMenu2**	**Option**	**Default**	**Description**
RESET	**NO**	**NO**	**NO**	Returns the USER parameter to the factory setting
	YES			
RS232 *Port* *(com1)*	**BAUD.RT**	600	**9600**	Sets the baud rate of com1
		1200		
		2400		
		4800		
		9600		
		19200		
	BYT.FMT	**8N1**	**8N1**	Sets the data bits format of com1
		7O1		
		7E1		
		7O2		
		7E2		
	OUT.MOD	NONE	**PRTCMD**	Sets the output mode of com1: NONE = no communication; CONT = continuous output; PRINT = press PRINT key for output; CMD = via print format command only;
		CONT		
		PRINT		

		CMD **PRTCMD** STABLE		**PRT.CMD** = output with PRINT key and print format command (*See FMT*); STABLE = output when the weight stable condition is met (See Motion settings) *Note: when set to PRINT or CMD mode, the weighing must be in stable condition.*
	FMT *Print Out Format*	**MULTPL** SINGLE EH-SCP SCP-12 Eh-sp2 Lfuulf Lfuu-- Lf--lf Lf---- --uulf --uu-- ----lf ------	**MULTPL**	Com1 output content and format: **MULTPL** = default format. *See Appendix*; SINGLE= only displayed content and current status will be output, it's compatible with NCI-SCP01; EH-SCP = command / response mode; SCP-12 = only displayed content and status will be output, it's compatible with NCI-SCP12(NCI3835); Eh-sp2 = *See Appendix;* Lfuulf / ------ = special characters. Do not use.
USB *Port* *(com2)*	**BAUD.RT**	600 1200 2400 4800 **9600** 19200	**9600**	Sets the baud rate of com2
	BYT.FMT	**8N1** 7O1 7E1 7O2 7E2	**8N1**	Sets the bits format of com2
	OUT.MOD	NONE CONT PRINT	**PRT.CMD**	Sets the output mode of com2: NONE = no communication; CONT = continuous output; PRINT = press PRINT key for output;

		CMD **PRT.CMD** STABLE		CMD = via print format command only; **PRT.CMD** = output with PRINT key and print format command (*See FMT*); STABLE = output when the weight stable condition is met (See Motion settings) *Note: when set to PRINT or CMD mode, the weighing must be in stable condition.*
	FMT *See Appendix*	**MULTPL** SINGLE EH-SCP SCP-12 Eh-sp2 Lfuulf Lfuu-- Lf--lf Lf---- --uulf --uu-- ----lf ------	**MULTPL**	Com2 output content and format: **MULTPL** = default format. *See Appendix*; SINGLE= only displayed content and current status will be output, it's compatible with NCI-SCP01; EH-SCP = command / response mode; SCP-12 = only displayed content and status will be output, it's compatible with NCI-SCP12(NCI3835); Eh-sp2 = *See Appendix;* Lfuulf / ------ = special characters. Do not use.
BEEP	**KEY**	**YES** / NO	**YES**	**Yes** = enables the beep when a key is pressed
	COMPAR *mode*	**NONE** L.LOW IN.LMT O.HIGH OUT.LMT	**NONE**	COMPARE function modes: **NONE** = disabled. See SBI 210-LCD Operation Manual and Config-Compar.
HOLD *Function*	**HLD.MOD**	NONE TOGGLE	**AUTO**	Enables the HOLD function mode: NONE = disabled. TOGGLE (Manual) = if selected, press the HOLD key to enter HOLD mode. If the weight is over (NLD.RNG) and stable

		AVERAG		(STB.TIM), the data is hold on the display. Press the HOLD key to exit the Hold mode. AVERAG = if selected, the weight over (NLD.RNG), which variation is less than (HLD.RNG), it's averaged in (AVG.TIM) and hold on the display. To exit this mode: press the HOLD key or wait (HLD.TIM) elapses. **AUTO** = if selected, acts as the AVERAG mode and after each NLD.RNG zero, any loads over (NLD.RNG), is hold on the display.
		AUTO		
	AVG.TIM *Average*	**1~60**	**5**	Averages weights in Hold mode for: 1~60 seconds.
	STB.TIM *Stable*	**3*AVG.TIM ~ 255**	**15**	Allows 3*(AVG.TIM) ~ 255 seconds for stable conditions to be met in Hold mode.
	HLD.TIM *Hold*	**0~65535**	**0**	Displays Hold mode weight for: **0** = until HOLD key pressed; 1~65535 = the scale exits the Hold mode after 1 ~ 65535 seconds.
	HLD.RNG *Oscillations*	**0~255**	**5**	Sets the weight oscillation range that can be averaged in Hold mode: 0 = any weight range can be averaged; **1~255** = only the weight which oscillates within the 1 ~ 255 div range can be averaged.
NLD.RNG *No Load Detected Range*		**1~255**	**10**	Sets the weight range that the indicator considers as the Zero range for the relevant function e.g. Auto Hold Mode. **1~255** = the range of weight is 1 ~ 255 div. Note: It must be above the Config-Motion.
A.OFF.T		**0~255**	**3**	Sets the auto off time: 0 = disabled; **1~255** = if in standby mode for 1~ 255 minutes, turn the scale off.
LCD.BLT		**AUTO**	**AUTO**	Sets the LCD backlight:

		OFF		**Auto:** if in standby mode for 10 seconds, turn the display backlight off. OFF：always off; ON：always on.
		ON		
LCD.CST		**CST1-5**	**CST5**	Adjusts the LCD contrast

4.2. Diagnostics

In the menus below there are various submenus available to check the scale LCD display and Comm Ports statuses and SBI 210-LCD indicator information.

4.2.1 Test Menu

In general weighing mode, press the **PRINT** and **ZERO/ON/OFF** keys. Release the keys when the "TEST" message pops up to open the Calibration Menu. The number of calibrations is shown.

Navigate the menu using the < ∧ ∨ > keys, press the **TARE** key to confirm or the **ZERO/ON/OFF** key to cancel the operation / exit the menu.

TEST	
SubMenu1	**Description**
DSP.TST	**LCD testing**: the indicator lights all the annunciators, including the 8 digits.
232.RD	**RS232 receive data testing**: the indicator displays 2.RD.-- It receives and displays any HEX codes less than 7F. E.g. ,If the code received is 0x31, the indicator displays 2.RD.31
232.TD	**RS232 send data testing:** the indicator displays 2.TD.55 and the serial port continuously transmits 0x55. Use the ∧ and ∨ keys to change the character.
USB.RD	**USB receive data testing:** same as RS232 receiving data testing.
USB.TD	**USB send data testing:** same as RS232 send data testing.
KEY.TST	**Operation keys testing: the** indicator displays KEY.-- The following code will be displayed when any of the below key is pressed HOLD 01, PRINT 02, ACC 04, UNIT 08, TARE 10, ZERO 20

4.2.2 Misc Menu

In general weighing mode, press the **BMI** and **ZERO/ON/OFF** keys. Release the keys when the "MISC" message pops up to open the Misc Menu.

Navigate the menu using the < ∧ ∨ > keys, press the **TARE** key to confirm or the **ZERO/ON/OFF** key to cancel the operation / exit the menu.

MISC	
SubMenu1	**Description**
CODE	Do not use.
VOL	**Checking the voltage**: the indicator board voltage is shown U X.X（V）
VER	**Checking the version**: the indicator software version is shown

4.3. Calibration Menu

The scale is configured from the factory to match the specified settings for each unit, as defined by the product specifications and sales brochure. Modification of the settings can be accomplished by altering the calibration settings below.

Calibration and/or configuration of calibration settings of your scale should be accomplished by a trained service technician using certified weights to ensure proper operation and accuracy. Calibration is not covered under warranty.

4.3.1 Calibration Options

In general weighing mode, press the **TARE** and **ZERO/ON/OFF** keys. Release the keys when the "CAL" message pops up to open the Calibration Menu. The number of calibrations is shown.

Navigate the menu using the < ^ v > keys, press the **TARE** key to confirm or the **ZERO/ON/OFF** key to cancel the operation / exit the menu.

CAL			
SubMenu1	**SubMenu2**	**Option**	**Description**
ZERO			Adjusts the CAL.P0 point only.
LINE	**CAL.P0**		Stores the Zero calibration point (mandatory).
	CAL.P1		Adds the cal. point 1 (mandatory). Use a standard weight over 10% F.S.
	END.Y	YES / NO	Saves and exits the calibration points: **Yes** = go to CAL.END; **No** = add another calibration point
	CAL.P2		Adds the cal. point 2 (optional). Use a standard weight over 10% F.S. and load used in **CAL.P1**.
	END.Y	YES / NO	Saves and exits the calibration points: **Yes** = go to CAL.END; **No** = add another calibration point

	CAL.P3		Linear calibration point3: do third weight point calibration, standard weight must be over 10%FS and be larger than it in **CAL.P2**, this point can be omitted.
GEO		**18**	Do not use. See SBI 210-LCD Operation Manual. See Confi-Geo.Cal
INPUT			Do not use. See SBI 210-LCD Operation Manual.
CAL.END			Saves and exits the calibration points. The indicator reboots in weighing mode.

4.3.2. Calibration Procedure

The procedure covers the *Line Calibration*. You can add up to 1+3 calibration points.

Calibration and/or configuration of calibration settings of your scale should be accomplished by a trained service technician using certified weights to ensure proper operation and accuracy.
Calibration is not covered under warranty.

1. Turn the scale on and zero the display, if necessary, by pressing the **ZERO/ON/OFF** key.
2. Press the **TARE** and **ZERO/ON/OFF** keys. Release the keys when the “CAL” message pops up to open the Calibration Menu. The number of calibrations is shown.
3. Press the **BMI** key to select the “LINE” menu option.
4. Make sure that there is no weight on the platform scale.
5. Press the **TARE** key to open the *Line Calibration* mode.

   CAL.P0, and 0 will be displayed. Press the **UNIT** key for more than 2.5s to change the calibration unit.
6. Press the **TARE** key to store the Zero Calibration Point.

   CAL.P1, and the scale capacity will be displayed.
7. Use the ^ v > keys to change the CAL.P1 weight value (>10% of the scale capacity)
8. Place the certified weight over the scale platform.
9. Press the **TARE** key to store the CAL.P1 Point.
10. Press the **TARE** key to save the calibration points and exit the Calibration mode or, press the **PRINT** key to add CAL.P2/3 points.

On calibration complete, the indicator will reboot and return to general weighing mode.
If there’s an error occurred in calibration, the message “CAL.Er” is displayed. Repeat steps 5 to 9 to adjust the calibration points.

4.4. Service Configuration Menus

The scale is configured from the factory to match the specified settings for each unit, as defined by the product specifications and sales brochure. Modification of the SBI 210-LCD Indicator settings can be accomplished by altering the configuration settings in the Config Menu.

The configuration and test of your scale should be accomplished by a trained service technician.

4.4.1 Configuration Options

Press and hold the **HOLD** key then turn the indicator on by pressing the **ZERO/ON/OFF** keys.

Release the **ZERO/ON/OFF** key when the display lights.

Release the **HOLD** key when the message “CONFIG” pops up to open the Configuration Menu.
The number of time that the indicator has been configured is displayed.

Navigate the menu using the < ^ v > keys, press the **TARE** key to confirm or the **ZERO/ON/OFF** key to cancel the operation / exit the menu.

CONFIG				
SubMenu1	**SubMenu2**	**Option**	**Default**	**Description**
RESET		YES / **NO**	**NO**	Resets the configuration to factory setting.
REGULA		**NONE** USA CANADA EUROPE	**NONE**	Do not use. See SBI 210-LCD Operation Manual.
PRIM.N		**100~ 100000**	**5000** (2000, old model)	Sets the number of divisions (div) of the primary unit of measure (lb).
PRIM.D		**0.0001~ 50**	**0.2** (0.5, old model)	Sets the weight division (1 div = 0.2 lb) value of the first unit of measure. The division value of the secondary unit of measure (1 div = 0.1 kg) is automatically determined by the indicator according to the first unit.
PRIM.Ut		kg / **lb**	**Lb**	Selects the primary unit of measure: kg or lb. The default calibration unit is the primary unit.
SECND.N		**100~ 125000**	**5000** (2500, old model)	Sets the number of divisions (div) of the secondary unit of measure (kg). Max 1.25*(PRIM.N)

MOTION		**1~255**	**4**	Sets the in-motion weight divisions range: **1~255** = ±0.25div * (1~255)
OVER.LD		**0~100**	**0**	Sets the overload weight limit: **0** = FS + 9 div 1~100 = 101%FS ~ 200%FS
UNITS	**kg**	**YES** / NO	**YES**	Sets the active unit of measure: **Yes** = enable the unit; **No** = the unit is not active.
	lb	**YES** / NO	**YES**	
	oz	YES / **NO**	**NO**	
	lb oz	YES / **NO**	**NO**	
ZRO.PNT	**IZSM**	**0~100**	**100**	Sets the initial zero (power on zero) weight range: 0 = no limit; **1~100** = (calibration zero point) ±1%FS ~ (calibration zero point) ±100%FS
	IN.IZSM	**WEIGHT**	**WEIGHT**	Sets the weight type as current initial zero point when current weight is inside the IZSM range: **WEIGHT** = current weight; CAL.ZRO = calibration zero; LAST.Z.T = last zero/tare value.
		CAL.ZRO		
		LAST.Z.T		
	OV.IZSM	**DSP.OVR**	**DSP.OVR**	Sets the weight type as current initial zero point when current weight is outside the IZSM range: **DSP.OVR** = if the initial zero is over range, display the 0----- error; WEIGHT = current weight; CAL.ZRO = calibration zero; LAST.Z.T = last zero/tare value.
		WEIGHT		
		CAL.ZRO		
		LAST.Z.T		
	SAZSM	**0~100**	**20**	Sets the ZERO key range: 0 = no limit; **1~100** = (initial zero point) ±1%FS ~ (initial zero point) ±100%FS

ZRO.PNT	**AZSM**	**0~100**	**56**	Sets the Automatic Zero Tracking weight range: 0 = 0 div. Disabled; **1~100** = ±(0.2+0.05*(1~100)) div/sec
FILTER		L1/ L2/ **L3**	**L3**	Filtering settings
FUNC	**HOLD**	**YES** / NO	**YES**	**Yes** = enables the Hold function;
	COUNT	YES / **NO**	**NO**	**No** = disabled. See SBI 210-LCD Operation Manual.
	PERCNT	**NO** 100%~ 100.00%	**NO**	**No** = disabled. See SBI 210-LCD Operation Manual.
	BMI	**YES** / NO	**YES**	**Yes** = enables the BMI function.
	COMPAR	YES / **NO**	**NO**	**No** = disabled. See SBI 210-LCD Operation Manual.
	ACCUMU	**NO** / MANUAL / AUTO	**NO**	**No** = disabled. See SBI 210-LCD Operation Manual.
	GEO.CAL	**YES**	**18**	**Yes** = enables the Geographical Adjustment Factor in the Calibration Menu.

5. Specifications

Part Number	Capacity & Resolution
810036380263	MS1000 LCD 500kg x 0.1kg / 1000lb x 0.2lb
AWT05-100564	MS1000-LCD Indicator only

MS1000 Platform:

Size: flat area: 31.5” x 25.2” (800mm x 640mm), including ramps 31.34” x 38.26” (1050mm x 972mm).
Material: mild steel with powder coat paint finish.
Construction: heavy duty welded channel support; four IP67 shear beam load cells with adjustable locking feet; ABS junction box - IP65 with 10 ft (3 m) interface cable.

SBI 210-LCD Indicator:

Display: 6 digits 38mm / 1.5” high, seven segments LCD display.
Power: 9V 600MA adaptor body with USA plugs (included) and 6xAA batteries (not included).
Operating temperature range: 32~104°F (0~40°C) max relative humidity 80% at 86°F (30°C).
Communication interface: full-duplex RS-232 & USB type A ports (Coms cable not supplied).

Operation keys: HOLD, PRINT, BMI, UNIT, TARE, ZERO/ON/OFF

Weighing Accuracy: +/- 3d

Tare Range: 100% subtractive

Zero Range: +/-2% FS

Cable Connection

Pin1: Excitation +

Pin2: Sense +

Pin3: Signal +

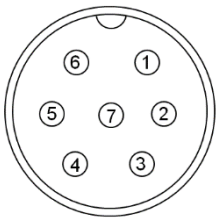
Pin4: Excitation –

Pin5: Sense –

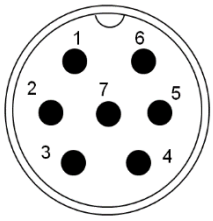
Pin6: Signal -

Pin7: Shield

The 7-pin connector from indicator cable (10 in)



The 7-pin connector from Load cell cable (10 ft)



Appendix - Print Out Formats (FMT)

MULTIPLE

Weighing Mode:	GROSS:	123 lb 4.56 oz
	TARE:	11 lb 2.22 oz
	NET:	112 lb 2.34 oz
	TOTAL:	789 lb 15.2 oz
BMI Mode:	SCALE ID:	123456
	GROSS:	110.0 kg
	TARE:	10.0 kg
	NET:	100.0 kg
	HEIGHT:	170 cm
	BMI:	34.6

SINGLE

Bit	Byte 1 (H1)	Byte 2 (H2)	Byte 3 (H3)	Byte 4 (H4)
0	0=stable	0= not under capacity	00=compare disable	00=general weighing
	1= not stable	1= under capacity	01=lower limit	01=count weighing
1	0= not at zero point	0= not over capacity	10=ok	10=percent weighing
	1= at zero point	1= over capacity	11=upper limit	11=other mode
2	0=RAM ok 1= RAM error	0=ROM ok 1=ROM error	0= gross weight 1= net weight	0=not in HOLD 1=in HOLD
3	0= eeprom OK	0=calibration ok	0=initial zero ok	0=battery ok

	1= eeprom error	1=calibration error	1=initial zero error	1=low battery
4	always 1	always 1	always 1	always 1
5	always 1	always 1	always 1	always 1
6	always 0	always 1	always 1	always 0
7	parity	Parity	parity	Parity

Command		**Response**
ASCII	HEX	
W<CR>	57 0d	Read scale weight: ①<LF>^^^^^^^^U_1U_2 $U_3U_4U_5$<CR><LF> $H_1H_2H_3$ H_4<CR><ETX>---over capacity ②<LF>_____$U_1U_2U_3U_4U_5$<CR><LF> $H_1H_2H_3$ H_4<CR><ETX>---under capacity ③<LF>-------- U_1U_2 U_3 U_4U_5<CR><LF> $H_1H_2H_3$ H_4<CR><ETX>---zero-point error ④<LF><p>$W_1W_2W_3W_4W_5$<dp>$W_6U_1U_2U_3U_4U_5$<CR><LF>$H_1H_2H_3H_4$<CR><ETX>---general data
S<CR>	53 0d	<LF> $H_1H_2H_3H_4$<CR><ETX>; read scale status
Z<CR>	5a 0d	<LF> $H_1H_2H_3H_4$<CR><ETX> ; simulate ZERO key
T<CR>	54 0d	<LF> $H_1H_2H_3H_4$<CR><ETX> ; simulate TARE key
U<CR>	55 0d	<LF> U_1U_2 U_3 U_4U_5<CR><LF>$H_1H_2H_3H_4$<CR><ETX>; simulate UNIT key
L<CR>	4c 0d	<LF> $H_1H_2H_3H_4$<CR><ETX>; simulate HOLD key
X<CR>	58 0d	power off the scale, simulate OFF key
others		<LF>? <CR><ETX>

EH-SCP

Bit	Status Byte
0	0=Stable weight data
	1=Scale in motion
1	0= Within weighing range
	1= Over capacity
2	0=Within weighing range

	1= Under zero
3	0= Within range
	1= Outside zero capture range
4	0= Not at center of zero
	1= Center of zero
5	always 1
6	always 1
7	parity

Command		**Response**
ASCII	HEX	
W	57	Read scale weight: ①general data <STX> W_1 W_2<dp>$W_3W_4W_5$<CR> ②if current weight is invalid <STX>?<Status Byte><CR>
Z	5a	Simulate ZERO key: <STX>?<Status Byte><CR> ;
L	4c	Switch to and send standard weight. Same as W above
K	4b	Switch to and send metric weight. Same as W above
others		Un-known commands: <STX>?<Status Byte><CR>

SCP-12

Bit	Status Byte1	Status Byte2
0	0=Scale in motion 1=Stable	1 = Under capacity 0 = Not under capacity
1	0= Scale at zero	1 = Over capacity

	1= Not at zero	0 = Not over capacity
2	0=RAM error	1 = ROM error
	1= RAM okay	0 = ROM okay
3	0= EEPROM error	1 = Faulty calibration
	1= EEPROM okay	0 = Calibration okay
4	Always 1	Always 1
5	always 1	always 1
6	always 0	always 0
7	parity	parity

Command		**Response**
ASCII	HEX	
W<CR>	57 0D	Returns decimal lb, kg or oz weight, units and status. <LF>pxxx.xxUU<CR>hh<ETX> Returns ounces weight with units plus scale status. <LF>p00xxxxxOZ<CR>hh<ETX> Scale status only if initial zero error. <LF>hh<CR><ETX>
S<CR>	53 0D	Read scale status :<LF>hh<CR><ETX>
Z<CR>	5A 0D	Simulate ZERO key:no response from scale.
others		Un-known commands:<LF>?<CR>

EH-SP2

MM	Status Byte
gg	Scale in motion
GG	Stable weight data

Command		**Response**
ASCII	HEX	
<CR>	0d	Read scale weight:

		<P>W1W2W3<dp>W3W4<sp>U1U2<sp>MM<sp><sp><CR> <LF><ETX>

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