

# SR Scales®

by **SR**® Instruments, Inc.

**Model SR755i-KG**



**Wheelchair Scale**

## **Operating and Service Manual**

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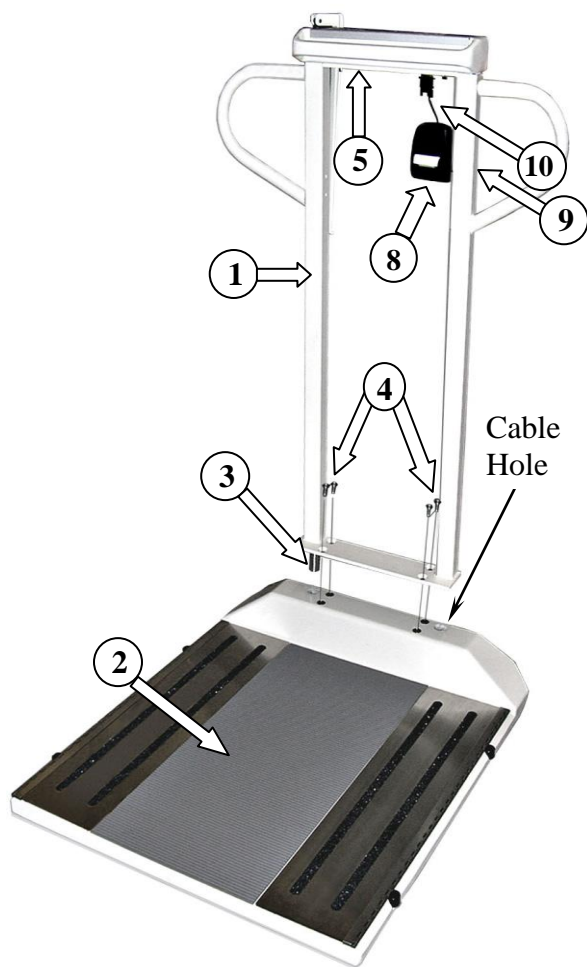
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## PACKING CHECKLIST – Model SR755i-KG

√	DESCRIPTION	QUANTITY
	<b>Box 1</b>	
	BASE ASSEMBLY	1 ea
	MAST ASSEMBLY with DISPLAY	1 ea
	DISPLAY UNIT WITH CABLE	1 ea
	PACKAGE OF SIX (6) “D” CELL BATTERIES	1 ea
	3/8-16 FLAT HEAD SCREWS	4 ea
	CALIBRATION CERTIFICATE	1 ea
	WARRANTY CARD	1 ea
	MANUAL	1 ea
	<b>Box 2 SR8220 Optional Printer Kit</b>	
	PRINTER	1 ea
	PRINTER BATTERY CHARGER	1 ea
	PRINTER CABLE	1 ea
	PRINTER MAST BRACKET & HARDWARE	1 ea
	PRINTER MOUNTING BRACKET & HARDWARE	1 ea
	PRINTER PAPER	1 ea
	LOCTITE®	1 ea

## ASSEMBLY



	PART NAME
1	Mast Assembly
2	Base Assembly
3	Height Bar Assembly (optional)
4	3/8-16 Screws
5	Display Unit
6	Battery Compartment Cover
7	Display Cable Connector
8	Printer (optional)
9	Printer Mast Bracket (optional)
10	Printer Cable (optional)

**STEP 1** Unpack the scale system and check parts against the **PACKING CHECKLIST**. If there are any missing or damaged parts, please call the Service Hotline: 1-800-654-6360.

**STEP 2:** (Figure 1) Position the Mast Assembly (1) into the Base Assembly (2) as shown, while feeding the display cable through the cable hole on the right.

**STEP 3:** (Figure 1) Insert the four (4) 3/8-16 screws (4) into the holes in Mast Assembly and Base Assembly as indicated. Secure the Mast Assembly by tightening screws into Base Assembly.

**Figure 1: Scale Assembly Diagram**

**STEP 4:** Gently rest the scale on its side. Verify that the serial number on the bottom of the Display Unit (5) matches that on the Battery Compartment Cover (6); located in the Base Assembly between the wheels.



**Figure 2: Display Cable Connector and Battery Compartment Cover**

Continued next page

## ASSEMBLY Cont'd

**STEP 5:** Attach the Display Cable Connector (7) to its mate in the Base Assembly. Slide the extra cable back up into the mast pipe.

**STEP 7:** Install the six (6) “D” cell batteries as indicated on the Battery Compartment Cover label. Tightly close the cover.

**STEP 8:** Return the scale to the upright position.

### INSTALLING OPTIONAL PRINTER

**STEP 1:** Mount the Printer Mast Bracket (9) to the rear of the Mast Assembly (1) using the two (2) mounting screws provided. **NOTE:** The three holes on the Printer Mast Bracket should be towards the top of the Mast (figure 3).

**STEP 2:** Apply a small amount of Loctite® to the three (3) small screws provided and attach the Printer Mounting Bracket to the Printer Mast Bracket (figure 4).

**STEP 3:** Attach the Printer to the Printer Mounting Bracket by inserting the tabs on the Printer Mounting Bracket (figure 4) into the slots on the back of the Printer and carefully snap in place.

**STEP 4:** Plug the Printer Cable into the Printer and into the Display Unit. Tighten the connector screws into the Display Unit connector.



**Figure 3: Printer Mast Bracket**



**Figure 4: Printer Mounting Bracket**

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## ASSEMBLY Cont'd

### INSTALLING OPTIONAL HEIGHT BAR ASSEMBLY

**STEP 1:** Remove the round plug from the top left of the Display Unit. Insert the Height Bar Assembly into the hole in the Display Unit. Ensure the Height Bar Assembly seats correctly in the Base Assembly (Item 3, Figure 1).

**NOTE:** It may be necessary to loosen the four (4) 3/8 – 16 flat head Mast Base Assembly mounting screws (Item 4, Figure 1), to allow movement of the Mast for insertion of the Height Bar Assembly into the Base Assembly.

**STEP 2:** After Height Bar Assembly installation re-tighten the four (4) 3/8 – 16 flat head Mast Base Assembly mounting screws.

**STEP 3:** Tighten the two (2) Allen screws into the Display Unit to secure the Height Bar Assembly to the scale.

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## REPLACEMENT PARTS and ACCESSORIES

Part #	Description
SR8285CM	Height Bar Assembly (optional)
SR8220	Printer Kit (optional; contains all printer parts listed below)
FRAP1300	Printer
FRAP13900BR-01	Printer Mounting Bracket
FRAP1300-D9	Printer Cable
FRAP1300BP01	Rechargeable Battery Pack
FRBC1300	Printer Battery Charger
FRTTP130012C	Paper, Thermal Printer 58mm (10 Rolls)
MF8205	Printer Mast Bracket

## SYSTEM DESCRIPTION and INTENDED USE

### SYSTEM DESCRIPTION

The SR755i –KG Wheelchair Scale employs the latest in microprocessor and load cell technology to provide accurate and repeatable weight data. Four (4) identically matched transducers are strategically placed to ensure an accurate representation of the patient's weight.

The low power microprocessor circuitry allows the SR755i-KG to derive its power from six (6) common "D" cell batteries, which will provide up to 166 hours of weight readings before needing replacement. This eliminates the need for an external battery charger or the danger of an AC power supply cord on a portable scale.

The patient's weight is displayed on a 16-character dot matrix LCD. The weight data may be viewed in kilograms with a displayed resolution of 0.1 kg.

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## SYSTEM DESCRIPTION and INTENDED USE cont'd

### INTENDED USE

The SR755i-KG Wheelchair Scale is specifically designed for use as a portable patient weighing system for ambulatory and non-ambulatory wheelchair bound patients or those that need to be supported by a chair or walker. Maximum weight capacity must not exceed 454 kilograms gross weight.



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### MICROBAN ANTIMICROBIAL PROTECTION

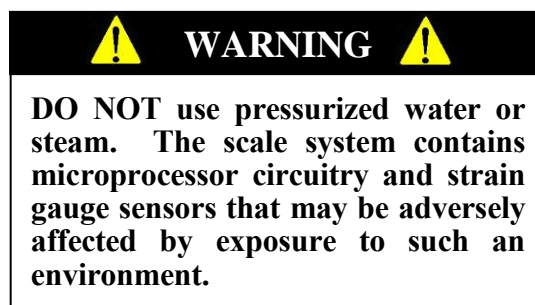
Microban® antimicrobial technology has been added to help reduce the growth of bacteria as part of a medical center's approach to creating a cleaner healthcare environment. For more information, visit <https://www.microban.com/sr-scales>

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### MAINTENANCE and CLEANING

The display case for the SR755i-KG Wheelchair Scale is made of a powder-coated aluminum casting. Exercise caution when cleaning the display window as it is made of clear polyester and can be scratched by abrasive cleaners. Mild soap and water is recommended for general cleaning and disinfecting.



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### STORAGE and TRANSPORTATION

#### STORAGE

If storing this equipment for periods longer than three (3) months, remove the batteries. To maintain proper operation of this instrumentation, storage and transport conditions should not vary outside the following conditions: Relative Humidity 0% to 85%, Ambient Temperature 14°F to 122°F (-10°C to +50°C).

#### TRANSPORTATION

To transport the SR755i-KG Wheelchair Scale, lower the Height Bar if installed, tip the scale back and wheel it to a new location. Lower the platform back down to the floor, being careful not to shock the scale.

## SPECIFICATIONS

<b>MAXIMUM WEIGHT CAPACITY</b>	454 kg
<b>PLATFORM SIZE</b>	71 cm x 71 cm
<b>HEIGHT GAUGE (optional)</b>	Telescoping gauge – 109 cm to 201 cm
<b>DISPLAY TYPE</b>	16-Character Dot Matrix LCD
<b>DISPLAY RESOLUTION</b>	0.1 kg
<b>ACCURACY</b>	0.1% +/- 1 digit of displayed resolution for calibrated range
<b>AUTO ZERO</b>	One button operation
<b>AUTO POWER DOWN</b>	Approximately 30 seconds (adjustable to 300 seconds)
<b>RECALL</b>	Recalls last stored weight, height, and BMI
<b>AVERAGING</b>	Automatic digital filter
<b>POWER SUPPLY</b>	Six (6) “D” cell batteries
<b>CALIBRATION</b>	Calibration is traceable to NIST standards.
<b>OPERATING CONDITIONS</b>	Normal operating conditions for this product: Ambient Temperature Range: 68°F to 85°F (20°C to 30°C), Relative Humidity Range: 0% to 85%. Avoid exposure to high-pressure water or steam.
<b>TRANSPORT and STORAGE</b>	Storage and transport conditions should not vary outside the following conditions: Relative Humidity 0% to 85%, Ambient Temperature 14°F to 122°F (-10°C to +50°C). Remove batteries if storing longer than three (3) months.



## BUTTON FUNCTIONS




Figure 5: Button Display

### ZERO / WEIGH



Press and hold to zero. The display will read “**WT = 0.0 kg**”. This is used to zero the system before placing the patient on the scale system. This action also resets previously stored weight, height and BMI values to zero. Ensure that nothing is in contact with the weighing surface during this procedure.

Press to weigh. Weight stable indicator “” flashes then remains solid when stable. Auto stores stable weight in memory.

### SEND (PRINTER / EHR)



Press to send stored values to EHR or to printer. Output values include time, date, weight, height, and BMI. Also, indicated on display when paper is out, “**PAPER OUT**” and when door is open, “**PAPER DOOR OPEN**”.

### RECALL



Press to recall the last stable weight. Display will scroll thru “**WT**”, “**HT**”, and “**BMI**” stored values in approximately two second intervals.

### ENTER



Press to save height data and display BMI calculation. Stable weight, height and BMI values are stored in memory until next stable weight is stored or until system is zeroed.

### BMI



Press to calculate the BMI. When the “**BMI**” is pressed, the default starting value “**HT = 165 cm**” is displayed. If there is no stored stable weight, the display will indicate “**NO WEIGHT DATA**” and then go back to the weigh screen “**WT = 0.0 kg**”.

Continued next page

## BUTTON FUNCTIONS cont'd

### MENU



Press Menu to edit setup.

Setting **ON TIME**: Use **UP** or **DOWN** arrow buttons to adjust the “**ON TIME**”. The “**ON TIME**” may be set from 30 to 300 seconds in 30 second increments. Press **ENTER** to save changes.

Setting **TIME** and **DATE**: Use the **UP** arrow button to select digit. To change digit use the **DOWN** arrow button. Press **ENTER** to save changes.

**NOTE**: When selected, the year position defaults to “00”

### UP



Press **UP** to adjust height up from the default, to increase the scale’s “on time”, or to select a digit when setting time and date.

### DOWN



Press **DOWN** to adjust the height down from the default, to decrease the scale’s “on time”, or to change the value of a selected digit when setting time and date.

## BASIC SYSTEM OPERATION

### SETTING SYSTEM ZERO



Make sure the scale is free and clear of any obstructions and press and hold the **ZERO / WEIGH** button. The displayed message will indicate “**HOLD TO ZERO**” and count down to zero. Make sure that nothing is in contact with the scale while zeroing the system. In a few seconds, the display will read “**WT = 0.0 kg**”. This action also resets previously stored weight, height, and BMI values to zero.

### WEIGHING



Position the patient on the scale. Lock the patient’s wheelchair brake to prevent movement. Press the **ZERO/WEIGH** button. The weight stable indicator “□” flashes on the display. When the weight is stable, the weight stable indicator remains solid. The display will indicate the patient’s weight in kilograms; example: “**WT = 55.8 kg**”. The stable weight is auto stored in memory.

**NOTE**: If patient will be using a cane for support on the scale, place the cane on the scale while zeroing the system. This will ensure that the patient’s **NET** weight will be displayed. It is recommended that the system be zeroed prior to each new patient.



**CAUTION**



**DO NOT LEAVE PATIENT UNATTENDED ON THE SCALE PLATFORM**

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## BASIC SYSTEM OPERATION cont'd

### CALCULATING BMI



Press to calculate BMI.

When the **BMI** button is pressed, the default starting value is set either to 65 in or to 165 cm; example: “**HT = 165 cm**”. Use the **UP** or **DOWN** arrows to adjust the default height to the value of the patient’s height.

**NOTE:** To calculate the BMI, a patient’s stable weight needs be stored as indicated in “**WEIGHING**” above, if no stable weight has not been stored “**NO WEIGHT DATA**” will be displayed and the display will then go back to the weigh screen “**WT = 0.0 kg**”.

Press **ENTER** to save height data and display BMI calculation. The BMI will be displayed; example: “**BMI = 20.5**”.

### RECALLING LAST STABLE WEIGHT

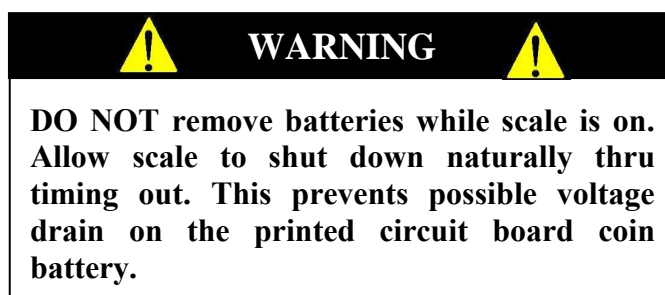


Press to recall last stable weight.

The display will scroll thru “**WT**”, “**HT**” and “**BMI**” stored values in approximately two second intervals; example: “**RCL WT = 55.8 kg**”, “**RCL HT = 165 cm**” and “**RCL BMI = 20.5**”.

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## BATTERY REPLACEMENT



**STEP 1:** The display will read “**CHANGE BATTERIES**”.

**STEP 2:** (Figure 6) Tip the scale on its side and unscrew the two (2) screws in the Battery Compartment Cover located on the base of the unit, between the wheels.

**STEP 3:** Remove and replace ALL six (6) “D” cell batteries. Refer to Battery Compartment Cover label for placement.

**STEP 4:** Press the “**WEIGH**” button to confirm display is working.

**STEP 5:** Tightly close the cover.

**STEP 6:** Zero the system.



**Figure 6: Battery Compartment**

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## THEORY OF OPERATION

SR Instruments patient weighing systems are digital scales. Strain-gauge force cells convert the force of an applied weight into an analog signal. This signal is amplified by an operational amplifier and converted to a digital signal by an on-chip analog to digital converter. The digital signal is filtered, converted to appropriate units, and displayed on the liquid crystal display.

Strain-gauge force cells each contain four strain gauges mounted in a full Wheatstone-bridge configuration. These bridges convert the physical movement of the force cell, due to the applied mass on the system, into minute changes in electrical resistance. These changes in resistance produce a voltage difference across the Wheatstone-bridge, which is amplified by the operational amplifier. The amplifier is configured to current sum the output of each cell, with potentiometers serving to normalize the sensitivity (voltage out per unit of weight applied) of each bridge. The offset potentiometer produces a small current, which nulls the output of the amplifier for an unloaded system.

The output of the operational amplifier is digitized by the analog to digital converter. The sigma-delta converter sums a rapid sequence of 0's (0 volts) and 1's (reference voltage) to achieve balance with the input signal from the amplifier.

The micro-controller filters the digital output of the analog to digital converter, subtracts the value saved during the system zero operation and scales the filtered output, and then displays the result on the liquid crystal display. The micro-controller performs a moving-median filter of data for continuous weigh and, for AutoHold; the micro-controller performs checks for signal stability before locking in on the reading. If the data variance is greater than 0.1% in the AutoHold mode, the micro-controller will reset the filter and start a new filtering period.

The micro-controller can be placed in a calibration mode, where the system can be re-calibrated. In the calibration mode, the system slope is calculated from two points (zero and full scale) in the 2-point calibration mode or the slope and change in slope is calculated from three points (zero, half, and full scale) in the 3-point calibration mode.

## CALIBRATION

**NOTE:** Ensure that nothing is in contact with the scale system during this procedure. Remove hands from the system when noting the displayed calibration results.

### CHECKING CALIBRATION

**STEP 1:** Select known calibrated weights, traceable to NIST.

**NOTE: DO NOT USE** barbells or un-calibrated weights.

**STEP 2:** Zero the scale by pressing and holding **ZERO / WEIGH** button.

**STEP 3:** Place the calibrated weight on the scale and press the **“ZERO / WEIGH”** button. Wait for scale to stabilize; note scale reading. Repeat step as necessary to verify calibration within desired range.

**NOTE:** The scale readings for both weights should be within the Calibration Tolerance (Figure 7).

KILOGRAM CALIBRATION TOLERANCE TABLE		
LOW LIMIT	APPLIED LOAD	HIGH LIMIT
50.0	50.0	50.1
99.9	100.0	100.1
199.8	200.0	200.2
299.7	300.0	300.3
399.6	400.0	400.4
453.5	454.0	454.5

Figure 7: Calibration Tolerance Table

! **IMPORTANT** !

**CALIBRATION** Qualified service personnel only should perform this procedure. The SR755i-KG load cells have no user serviceable components and should not be tampered with for any reason. Re-calibration is generally not required, but should be verified periodically to ensure accuracy. The recommendation for calibration check is at least once every 12 months, or as individual maintenance policy requires.

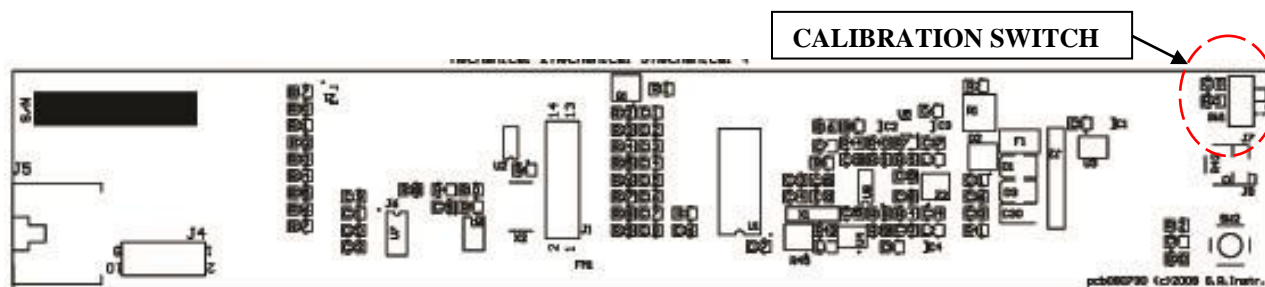
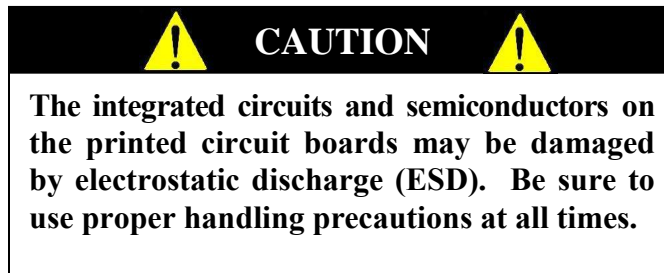


Figure 8: Calibration Switch Diagram

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## CALIBRATION cont'd



### SETTING CALIBRATION

**NOTE:** Ensure that nothing is in contact with the scale system during this procedure. Remove hands from the system when noting the displayed calibration results.

**STEP 1:** Remove the four (4) screws on the bottom of the display housing. Lift the display panel. Put the scale system into the Calibration Mode by switching the calibration switch on the display board (Figure 8). “CALIBRATION” will flash on the display.

**STEP 2:** Select known calibrated weights, traceable to NIST.

**NOTE:** The first weight should be at least 227 kg (half of the maximum scale capacity). The second weight should be less than half of the first weight. **DO NOT USE** barbells or uncalibrated weights.

**STEP 3:** Press the **MENU** button until “FULL = 453.59 kg” is displayed. Set the **FULL** value of the first selected calibrated weight. Use the **UP** arrow button to select the digit and the **DOWN** arrow button to change digit. Press **ENTER** to save changes.

**STEP 4:** Press the **MENU** button until “HALF = 226.79 kg” is displayed. Set the **HALF** value of the second selected calibrated weight. Use the **UP** arrow button to select the digit and the **DOWN** arrow button to change the digit. Press **ENTER** to save changes.

**STEP 5:** Press **MENU** button until “3 Pt Calibration” is displayed. Press the **UP** arrow button.

**STEP 6:** Zero the scale by removing all weight from the platform. Press the **UP** arrow button.

**STEP 7:** Place the **HALF** weight from Step 4 on platform. Allow weight to stabilize. Press **UP** arrow to save change. Remove weight.

**STEP 8:** Place the **FULL** weight from Step 3 on platform. Allow weight to stabilize. Press **UP** arrow to save change. Remove weight.

**STEP 9:** Press **ENTER** to save the calibration, or **WEIGH** to exit without saving.

**STEP 10:** Switch the scale system out of the Calibration Mode on the display board (Figure 8).

**STEP 11:** Place the display panel into the display housing. Align the display panel with the four holes in the display housing. Secure display panel with the four (4) mounting screws.

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## CONFIGURING SEND BUTTON

**STEP 1:** Press the “**MENU**” button until “**DATA OUT = PRINT**” is displayed

**STEP 2:** Press “**UP**” or “**DOWN**” button to select between “**EHR**” and “**PRINT**”

**STEP 3:** Press the “**ENTER**” button to save

**NOTE:** Orientation of printer output can be changed by pressing the “**MENU**” button until “**PRINT INVERTED**” or “**PRINT NORMAL**” is displayed. Press “**UP**” or “**DOWN**” button to select between the two.

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### EHR OUTPUT

Electronic Medical Records (EMR) / Electronic Health Records (EHR) technology is supported by the i-series scales from SR Instruments. The EMR/ EHR software is not included with scale. There are many different EMR/ EHR software available and the connectivity of the scale to the software requires the services of a professional.

A null modem cable is required to communicate with the scale.

Scale output when send button is configured to Electronic Health Records is as follows:

```
<esc>R<esc>Wnnn.n<esc>Hmmm.m<esc>Bkk.k<esc>Uuu<esc>E
```

Where:R is read

W is weight

nnn.n is the weight in kg

H is height

mmm.m is the height in cm.

B is BMI

kk.k is the BMI

U is units (kg)

uu is KG

E is end of packet.

## TROUBLESHOOTING

SYMPTOM	REASON/CORRECTIVE ACTION
The characters only appear on half of the display.	Press the “ <b>WEIGH</b> ” button or remove one battery. Wait five seconds, then re-install the battery and try the “ <b>WEIGH</b> ” button again.
The display lights appear to work, but do not respond to button activation.	Check to ensure the membrane switch label is correctly plugged into display board. Check to ensure the calibration switch is not in the Calibration Mode (Figure 8).
The display shows no reading at all.	Check to ensure batteries are installed correctly (see directions for <b>BATTERY REPLACEMENT</b> ). Check display cable to make sure it is connected securely.
<b>For additional information or assistance, telephone our Service Hotline: 1-800-654-6360 or e-mail: <a href="mailto:sri@srinstruments.com">sri@srinstruments.com</a></b>	



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## WARRANTY

### FOUR YEAR LIMITED WARRANTY

Each **SR Scales**<sup>®</sup> system is manufactured with high quality components. SR Instruments, Inc. warrants that all new equipment will be free from defects in material or workmanship, under normal use and service, for a period of four (4) years from the date of purchase by the original purchaser. Normal wear and tear, injury by natural forces, user neglect, and purposeful destruction are not covered by this warranty. Warranty service must be performed by the factory or an authorized repair station. Service provided on equipment returned to the factory or authorized repair station includes labor to replace defective parts. Goods returned must be shipped with transportation and/or broker charges prepaid. SR Instruments, Inc.'s obligation is limited to replacement of parts that have been so returned and are disclosed to SR Instruments, Inc.'s satisfaction to be defective. The provisions of this warranty clause are in lieu of all other warranties, expressed or implied, and of all other obligations or liabilities on SR Instruments, Inc.'s part, and it neither assumes nor authorizes any other person to assume for SR Instruments, Inc. any other liabilities in connection with the sale of said articles. In no event shall SR Instruments, Inc. be liable for any subsequent or special damages. Any misuse, improper installation, or tampering, shall void this warranty.

### DAMAGED SHIPMENTS

Title passes to purchaser upon delivery to Transportation Company. Any claims for shortage or damage should be filed with the delivery carrier by purchaser.

### RETURN POLICY

All products being returned to SR Instruments, Inc. require a Return Goods Authorization number (RGA). To receive an RGA, call our Technical Service Team at 716-693-5977 or toll-free in the USA and Canada at 800-654-6360.

When inquiry is made, please supply model and serial numbers, purchase order, if the scale was bought on contract, and reason for return.

Generally, deleted, damaged, and outdated merchandise will not be accepted for credit. A minimum restocking charge of 15% will be assessed on return of current merchandise.

All returns are to be shipped **FREIGHT PREPAID** to: SR Instruments, Inc., 600 Young Street, Tonawanda, NY 14150.

### RESTOCKING FEE

- **15% fee** for any scale that has been opened and used
- **10% fee** for any scale returned that has been ordered incorrectly or refused delivery with no model change
- **5% fee** if an error in ordering has been made and a different model exchanged
- **No fees** will be charged if the scale is returned because of an error on the part of SR Instruments, Inc.
- **No returns** accepted after 60 days.

# **SR Scales®**

By **SR®**Instruments, Inc.

**Precision & Technology in  
Perfect Balance®**