MSI-4260B

Port-A-Weigh Crane Scales

Technical Manual

RICE LAKE®
WEIGHING SYSTEMS

Contents

*Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at **www.ricelake.com/training** or obtained by calling 715-234-9171 and asking for the training department.*

*Rice Lake continually offers web-based video training on a growing selection of product-related topics at no cost. Visit **www.ricelake.com/webinars***

1.0   Introduction

The MSI-4260 Port-A-Weigh has an established reputation as the industry standard in medium to heavy-capacity overhead weighing and duty-cycle needs. With a proven mechanical design and advanced electronics, the MSI-4260 is versatile, reliable, accurate and user friendly.

The MSI-4260 is designed to meet or exceed requirements of applicable ASME, ANSI, OSHA safety standards. Multiple options and accessories, including RF remote control and RF remote displays are available to further enhance the performance and application versatility of the MSI-4260.

Manuals and additional resources are available from the Rice Lake Weighing Systems website at **www.ricelake.com**

Warranty information can be found on the website at **www.ricelake.com/warranties**

1.1   Features

- Designed to meet or exceed applicable U.S. and international safety standards.
- Provides up to 40 hours of weighing time, utilizing automatic sleep mode.
- Automatic power off conserves battery life by sensing no activity after a set number of minutes, which is set by the operator and turns off the power.
- Automatic sleep mode preserves the battery life by dimming the LED display after a set number of minutes of no activity.
- Has rugged construction throughout. The buttons are sealed and rated for over 1 million operations.
- Precise high resolution (2500 division standard and up to 10,000 possible) 24 bit A/D conversion coupled with advanced RISC micro controller, provides world class features and accuracy.
- Display includes five large, 1.2" (30.5 mm) LED digits for clear weight readings from a distance. The display is always tilted down for easier viewing from below.
- Is easy to maintain: full digital calibration assures reliable, repeatable measurements. It can be calibrated without test weights using the *C-Cal* technology.
- Is selectable for kg/lb unless prohibited by Legal-for-Trade regulations.
- Provides automatic or manual weight totalization for loading operations.
- Is easily customized for special applications and using oversized attachments and interface hardware.
- High speed Peak mode for wire and rope stress analysis.
- Eight setpoints can be set for any in-range weight for operator alerts or process control.
- Includes ScaleCore technology providing quick and easy software updates and calibration/setup backup.
- Two service counters ensure load train safety by warning the user to perform a load train safety check when the lift count gets high or the scale has been overloaded repeatedly.

1.2   FCC Compliance

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 Class A prescites dans le Règlement sur le brouillage radioélectrique edicté par le ministère des Communications du Canada.

1.3   Safety

Safety Signal Definitions:

⚠ DANGER	*Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. Includes hazards that are exposed when guards are removed.*
⚠ WARNING	*Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death. Includes hazards that are exposed when guards are removed.*
⚠ CAUTION	*Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.*
IMPORTANT	*Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.*

General Safety

Do not operate or work on this equipment unless this manual has been read and all instructions are understood. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals.

⚠ WARNING

Failure to heed could result in serious injury or death.

Do not allow minors (children) or inexperienced persons to operate this unit.

Do not stand near the load being lifted as it is a potential falling hazard. Keep a safe distance.

Do not use for purposes other then weight taking or dynamic load monitoring.

Do not use any load bearing component that is worn beyond 5% of the original dimension.

Do not use the scale if any of the components of the load train are cracked, deformed or show signs of fatigue.

Do not exceed the rated load limit of the scale, rigging elements or the lifting structure.

Do not allow multi-point contact with the hook, shackle or lifting eye of the scale.

Do not allow high torque on the scale unless it is specifically designed for high torque.

Do not make alterations or modifications to the scale or associated load bearing devices.

Do not use improperly rated or sized shackles. Use only Rice Lake Weighing Systems recommended shackles.

Do not remove or obscure warning labels.

Do not submerge to clean.

For guidelines on the safe rigging and loading of overhead scales and dynameters, read the MSI Crane Scale Safety and Periodic Maintenance Manual (available at www.ricelake.com).

Keep hands, feet and loose clothing away from moving parts.

There are no user serviceable parts within the MSI-4260. Any repairs are to be performed by qualified service personnel only.

The MSI-4260 Port-A-Weigh scale has a safe mechanical overload of 200% and an ultimate overload of 500%. Overloads greater than 500% could result in structural failure and dropped loads. Dropped loads could cause serious personal injury or death.

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1.4   Display

The keys and display of the MSI-4260 front panel is described below.

Figure 1-1. MSI-4260 Front Panel

1.4.1   Keypad Functions

Key	Description
POWER	Power Key — Turns the MSI-4260 On and Off
ZERO	Zero Key — Used to zero out residual weight on the scale
TARE	Tare Key — Removes the weight of containers, trucks or carriers and places the scale in the Net weight mode
USER	User Key — Programmable to user selectable functions (Section 3.0 on page 10); This key is defaulted to the Test function

Table 1-1. Key Functions

1.4.2 Annunciators and LEDs

Figure 1-2. Front Panel

Annunciator	Description
→0←	Center of Zero — Indicates that the scale is zeroed and the weight is within 1/4d of zero
◣◢	Stable — Indicates that the weight has settled within the motion window (usually ±1d); When this symbol is off, the scale will not zero, tare or totalize
BT	Low Battery — Displays when 10% of battery life remains; LED blinks indicating automatic shutdown will occur
●●●	**SET POINTS** — Eight user programmable setpoints for early overload warnings; Blue LED = Setpoint 1, Green LED = Setpoint 2, Red LED = Setpoint 3
TTL	Total — Blue LED indicates the total weight is displayed for five seconds or less
NET	Net — Indicates the scale is in Net mode. Tare weight has been subtracted from the gross weight
PK	Peak — Indicates the scale is in peak hold mode
kg	kg — Red LED indicates weight display is in kilograms
lb	lb — Red LED indicates weight display is in pounds
x1K	X1000 — Blue LED is used in conjunction with the TOTAL LED, allowing weight accumulation beyond the 5-digit display capacity
▬	Acknowledge — Green LED is used to provide feedback to the operator that incoming remote commands have been received
8.8.8.8.8.	The main display digits include five, 1.2" (30.5 mm) brightness LED load display

Table 1-2. Annunciators and LEDs

1.5 Options

Part No.	Option	Description
150971	Wireless RF Option	RF Modem for wireless connectivity. Uses 802.15.4, 2.4GHz; For Communication with MSI RF Scalecore Products
173014	RF Rugged Remote Controller	100' (30 m) typical range Line-of-Sight. Uses 802.15.4, 2.4GHz. Hand-held transceiver; Requires scale with installed P/N:150971 Wireless RF option
139381	MSI-8000 RF Handheld Remote Display	300' (100m) typical range Line-of-Sight. Uses 802.15.4, 2.4GHz; Requires scale with installed P/N:150971 Wireless RF option
153591	MSI-8000HD RF Mountable Remote Display	300' (100m) typical range Line-of-Sight. Uses 802.15.4, 2.4GHz; Requires scale with installed P/N:150971 Wireless RF option
151095	MSI-8000 Audible Alarm	Is triggered by setpoint one; Uses Scale's modem port, must be in remote display if one is present
Consult	802.11 Wi-Fi Connectivity	Wi-Fi Ethernet Network Communication
Consult	85-265 VAC input power	Replaces 12V SLA Battery with Hardwired AC Power Cord
Consult	Audible Alarm	Is triggered by setpoint one; Takes up Scale's modem port, must be in remote display if one is present; Only be within the range of an active alarm for short periods of time or wear appropriate hearing protection
Consult	Anti-Heat Shield	Good for up to 3100° F for up to 30 minutes; Requires equal cool down time; Scale should be 1m or greater from heat source

Table 1-3. Available Options

⚠ **DANGER** *Wear appropriate hearing protection when any audible alarm is active. Not wearing appropriate hearing protection may result in hearing loss.*

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2.0 Installation

The MSI-4260 features a heavy duty, cast aluminum enclosure rated at NEMA Type 4 IP 66. It installs easily by hanging it on a crane using properly sized shackles.

> ⚠️ **WARNING** | *Refer to the Crane Scale Safety and Periodic Maintenance Manual (PN 153105) for safe loading and rigging guidelines when installing the model MSI-4260.*
>
> *Regular maintenance inspections of the lifting system should be performed to ensure safety. Pay particular attention for signs of stress on any element in the load train.*

Use the appropriate interface hardware for the capacity of the scale.
- If the interface hardware does not fit properly, Rice Lake Weighing Systems can supply the MSI-4260 with oversize lifting eyes or shackle interfaces.
- If the crane hook is too large to fit in the lifting eye with single point interface, then install the scale using adaptive rigging.
- If multiple attachments are needed, use a shackle or ring to attach the multiple lines to keep a single point attachment to the scale.

> **IMPORTANT** | *Using an oversize shackle or hook to interface with the MSI-4260 can cause off center loading and stress points that will reduce the life of the lifting eye or hook.*
>
> *Single point attachments are necessary to ensure the safety and accuracy of the scale system.*

2.1 Unpacking

When unpacking the MSI-4260, ensure that all assembly parts are accounted for. Check the MSI-4260 for any visible damage. If any parts were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately. If the MSI-4260 must be returned, it must be properly packed with sufficient packing materials. Whenever possible, use the original carton when shipping the unit back.

2.2 Battery Pack

The MSI-4260 is powered by a 12V Sealed Lead Acid (SLA) rechargeable battery. This battery will operate for up to 100 hours (depending on LED brightness setting) before requiring recharging.
Charging time for a completely discharged battery is up to eight hours. A spare battery pack is recommended to keep the MSI-4260 in continuous operation.

> **IMPORTANT** | *To obtain maximum service life from batteries, store between -4°F and 122°F (-20°C and +50°C).*
> *Stored batteries should be recharged every three months. The battery is fully charged when the status indicator on the battery charger is flashing.*

2.2.1 Battery Life

The battery life of the MSI-4260 depends on a number of factors:
- The brightness of the LED display and number of segments lit
- The amount of RF activity
- The age of the battery
- The condition of the SLA battery.

In order to conserve battery life, the MSI-4260 includes the following features.
- Automatic Power Off Mode — Senses no activity after the set amount of minutes and turns the scale off
- Automatic Sleep Mode — Dims the display after a set amount of minutes of no scale activity

The MSI-4260 automatically turns off when the SLA battery drops to approximately 10.5V. Recharge the battery when this happens, SLA batteries benefit from frequent recharging and can be recharged when it still has available life.
Due to the maintenance discharge imposed on the battery by the MSI-4260 electronics, do not store the MSI-4260 with the battery inside. Remove the battery if it will not be used for more than two weeks.

> **IMPORTANT** | *Leaving a discharged battery in the scale, which has a maintenance battery drain, can result in a deep discharged battery which will shorten its service life.*

> 📝 **Note** | *If the scale is in continuous use, a fully charged spare battery is recommended. Replace the drained battery as close as possible to the low battery warning.*
>
> *SLA batteries that have not been deep discharged should withstand 500 to 1500 charging cycles.*
>
> *Low battery warning annunciator indicates about two to four hours of additional use before MSI-4260 powers off.*
>
> *If MSI-4260 is not going to used again soon, remove SLA battery to prevent deep discharge while unit is in storage.*
>
> *Recycle the battery at an authorized recycling center when the average life drops to 20 hours or less.*

2.2.2 Battery Charger

The MSI-4260 is shipped with a battery charger designed to charge and maintain the battery. Exact charging time will depend on the degree of discharge of the battery. A battery removed when the low battery warning first appears should take about four hours to fully charge.

> ⚠ **DANGER** *Charger is for indoor use only and should not be used in wet locations.*

> 📝 **Note** *When the battery is new, it might take significantly longer for the initial charge. It is recommended to charge a new battery for 24 hours. It might take several charge/discharge cycles before full capacity is reached. Deep discharged batteries will also take significantly longer to charge.*
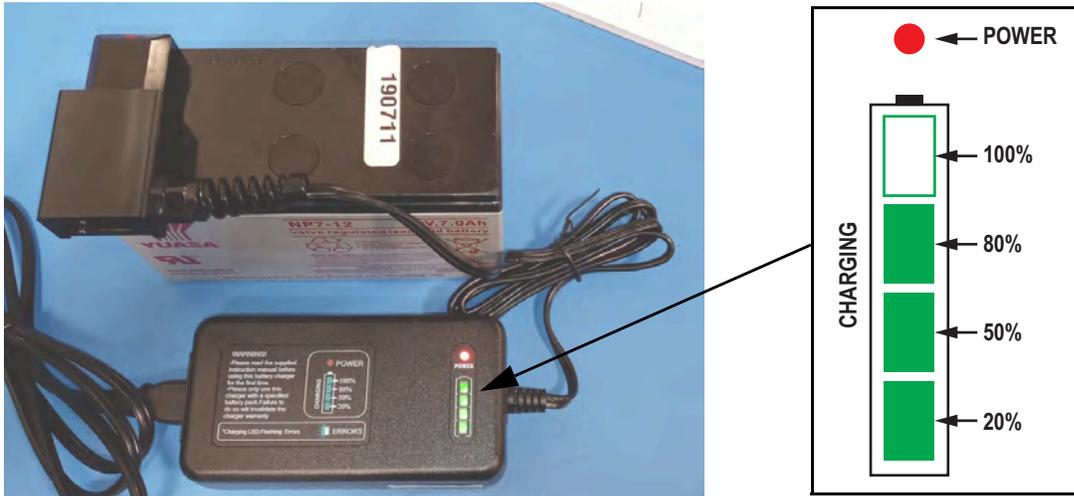
Figure 2-1. Battery Charger Connected to Battery

The battery charger illuminates annunciators as the battery charges.

1. Remove the battery from the MSI-4260 ().

2. Connect the charger assembly to the AC power supply (86-260 VAC). The power annunciator displays red.

> 📝 **Note** *If the power status light fails to illuminate, check the AC power connection to ensure the V in the jack is fully seated. AC power cords suitable for any world location are available from Rice Lake Weighing Systems.*

3. Plug the polarized connector into the jacks on the battery. Charging annunciators illuminate to represent charge percentage.

4. Charge until the all of the status annunciators fully illuminate.

When the charge cycle is complete, the battery can be left on the charger until it is needed. The charger keeps a maintenance float charge on the battery to ensure the best possible operation times.

> **IMPORTANT** *For maximum service life from batteries, the manufacturer suggests recharging after each 20 hours of use. Continuous deep discharging reduces maximum battery life cycle estimated at 2000 cycles.*

2.2.3 Battery Replacement

1. Turn the MSI-4260 off.
2. Secure the battery cover.
3. Release the latches holding the battery cover.
4. Slowly lower the cover while holding the battery in place.
5. Remove the battery by pulling straight back.
6. Install a fully charged battery by plugging it in to the exposed battery jacks.
7. Close the battery cover.
8. Reset the latches. Make sure the latches are completely latched and the cover is firmly in place.

Figure 2-2. Remove Battery

IMPORTANT	*Periodically, inspect the battery latches for fit. Adjust the screw latch by rotating the catch on its threads to maintain a tight seat on the battery O-ring.*
⚠ CAUTION	*The 12V Sealed Lead Acid battery can be a dangerous falling hazard. When opening the battery hatch, be sure to hold the battery to prevent it from falling. These batteries contain lead and should be recycled when it has reached its end of life.*

2.3   Communications Port

The MSI-4260 has a single communications port allowing access to the embedded ScaleCore through the terminal access mode or Rice Lake software. The terminal access mode is used for updating scale firmware while Rice Lake software can be used for calibration and configuration, backup and adjusting scale settings. This communications port is not intended for output use.

2.3.1   Communications Port Cables

The MSI-4260 comes standard with one communications port cable wired for RS-232 following the AT standard for 9-pin serial cables (DCE). An un-terminated cable is also available for wiring the serial cable for RS-232.

Table 2-1 shows the wiring color code.

Signal	Wire Color
TxD (transmitted data)	Brown
RxD (received data)	Black
CTS (clear to send)	Grey
RTS (request to send)	White
GND	Blue
PG (protective ground)	Drain Wire

Table 2-1. RS-232 Wiring Code
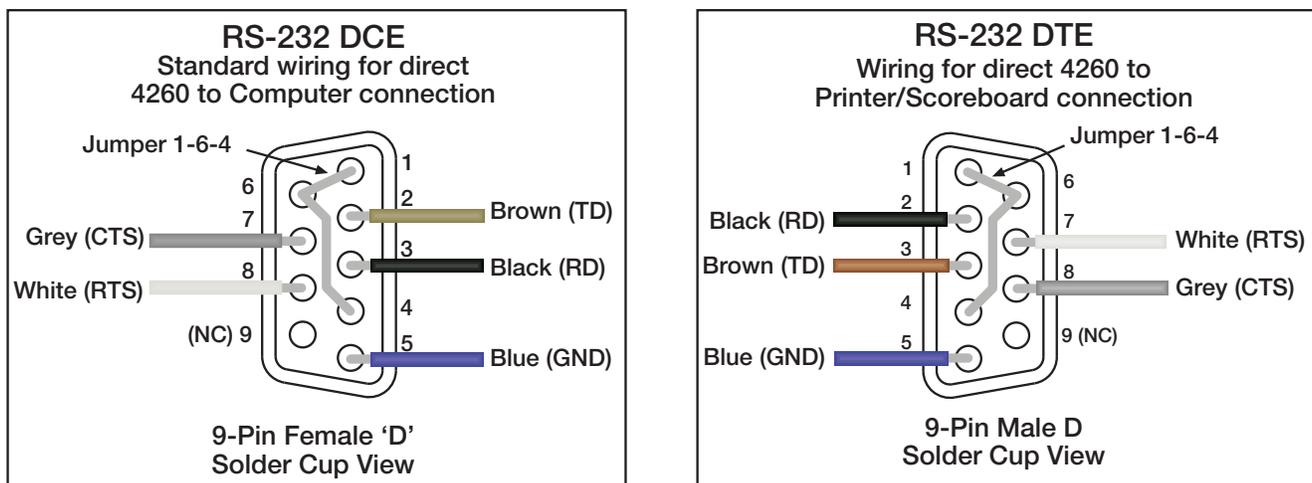
Figure 2-3. Comm Port Cable Assignments Examples

2.4   Servicing

Rice Lake's dealer network provides both on-site and depot servicing of MSI-4260 crane scales. Please contact a local dealer or Rice Lake Weighing Systems to obtain a return material authorization (RMA). Due to the weight and size of many of the product, it is not always necessary to return the whole scale. Lower swivel hook assemblies and upper lifting shacles on 50k capacity models and above do not need to be returned for service or recalibration. There are no user serviceable parts inside the MSI-4260. Depot repair is performed with module and harness swaps.If the electronics are at fault, often the front casting section is all that needs to be returned.

Figure 2-4. Remove Front Casting

2.4.1   Remove Front Casting

See the following procedure to remove the front casting:

1.   Remove the cap screws (x4).

2.   Unplug connectors.

3.   Package the front casting well for safe shipping.

2.4.2   Reinstall Front Casting

See the following procedure to reinstall the front casting:

1.   Clean the front casting and bulkhead o-ring grooves with isopropyl alcohol.

2.   Reconnect the load cell cables and power cables then tighten the cables.

3.   While securing the o-ring, ensure the o-ring is flush with the o-ring grooves.

⚠️ **WARNING** *Replace damaged o-rings when necessary. Damaged o-rings may break the unit seal, causing water penetration.*

4.   Insert the bolts (x4) into the front casting then torque the bolts to 20-25 ft-lbs.

📝 **Note** *Apply anti-seize compound as necessary.*

3.0   Operation

The following sections describe the basic operation of the MSI-4260.

3.1   Navigation of Menus

- If a function key does not work, it is probably because the MSI-4260 is not set up to support the key. For example, if the Function Key is set for **TOTAL**, the *TOTAL* mode must also be set up in the *Setup* menu.

- When in *Setup* menu, [ZERO] drops back one menu level. At the root menu level, the [ZERO] stores the changes and returns to the weight mode.

- When in *Setup* menu, [POWER] returns directly to the Weight Display without storing the changes.

- When in *Setup* menu, [USER] functions as the scroll key.

- When in *Setup* menu, [TARE] functions as the **ENTER/SELECT** key.

3.2   Power

To turn on the power, press [POWER] . The following will display in order:

- The LEDs will light all segments at full brightness as a display test
- Display brightness will change to the setting determined in the Display Menu
- The software version number displays
- The MSI-4260 is ready for use

3.3   Zero

The zero key sets the zero reading of the scale. Press [ZERO] to take out small deviations in zero when the scale is unloaded. See Section 3.4 on page 11 for zeroing (taring) a package or pallet weights.

Note	*The scale digits display 0 (or 0.0 or 0.00, etc).*
	The backup memory in the MSI-4260 stores the zero reading and retains it even if the power fails.

Rules for Use

- Works in *GROSS* or *NET* mode.
- Zeroing while in net mode will zero the gross weight causing the display to show a negative tare value.
- The scale must be stable within the motion window. The scale will not zero if the stabilizer annunciator is off. The scale will remember that it has a zero request for two seconds. If a motion ceases within the motion window in that time, the scale will zero.
- The scale will accept a zero setting over the full Range of the scale (NTEP and other Legal-for-Trade models may have a limited zero range). Zero settings above 4% of full scale will subtract from the overall capacity of the scale.
  Example: If 100 lb on a 1000 lb scale is zeroed, the overall capacity of the scale will reduce to 900 lb, plus the allowed over-range amount.

3.4   Tare

Tare is used to zero out a known weight such as a packing container or pallet and display the load in NET weight.

A Tare value is entered by pressing [TARE]. The TARE function is defined as a Tare-In, Tare-Out operation.

The first press of [TARE] stores the current weight as a tare value and then the scale subtracts the tare value from the gross weight and changes the display to **NET** mode. The next press of [TARE] will clear the Tare value and revert the display to **GROSS** mode.

To view the Gross weight without clearing the Tare Value, program [USER] to the function NET/GROSS. The RF Remote Control has a Net/Gross permanently available.

To tare and display the net weight, press [TARE].

Note	*The weight reading must be stable within the motion window for the tare function to work.*
	The scale digits display 0 (or 0.0 or 0.00, etc) and the weight mode changes to NET.
	The backup memory in the MSI-4260 stores the Tare reading and can restore it even if power fails.

To clear the tare and revert to gross weight, press [TARE]. **GROSS** displays.

- Only positive gross weight readings can be tared
- The ◣◢ must be off indicating weight reading is stable
- Setting or changing the tare has no effect on the gross zero setting
- Taring will reduce the apparent over range of the scale

    Example: Taring a 100 lb container on a 1000 lb scale, the scale will overload at a net weight of 900 lb (1000-100) plus any additional allowed overload (usually ~4% or 9d).

Note	*The scale stores the tare value in non-volatile memory and is restored when power is cycled.*

4.0   Setup

The following keys can be used when navigating through the menus while setting up the MSI-4260.

• Press ![POWER] to exit setup without saving changes. `CAncEL` displays momentarily and unit enters **Weigh** mode.

• To enter a decimal point, press ![POWER] while the digit is blinking.

• Press ![ZERO] to save and go back one level. Press it again to leave the setup mode, `StorE` will display briefly when entering **Weigh** mode.

• If a wrong value is entered, press ![ZERO] to step back one digit and press ![TARE] to change the digit.

• Press ![TARE] to enter or select a parameter.

• Press ![USER] to scroll through the parameters.

4.1   Setup Menu

To enter into the *MSI-4260* setup menu, press ![POWER] and ![USER] simultaneously.

Parameters	Choices	Description
`FUnc`	`OFF`	Function User Key 1 – User definable key that can be programmed to one of several functions
		Function User Key 2 – User definable key that can be programmed to one of several functions; Only available on the RF remote being used with the MSI-4260
	`tESt`	Test Display – Section 4.1.2 on page 13
	`totAL`	Total – Section 4.1.3 on page 14
	`u-ttL`	View Total – Function always available on the RF Remote (Section 4.1.4 on page 14)
	`nEtGr`	Net/Gross – Function always available on the RF Remote (Section 4.1.5 on page 14)
	`P-HLd`	Peak Hold – Section 4.1.6 on page 14; Function not available or non-functional in OIML R76 or NTEP HB44 modes
	`Unit`	Units – Section 4.1.7 on page 14; Function not available or non-functional in OIML R76 & 1Unit modes
	`HirES`	High Resolution – x10 display resolution; For testing and maintenance use only; Not a legal weigh mode; Does not increase scale resolution or accuracy Section 4.1.8 on page 15
	`Print`	Print – Section 4.1.9 on page 15

`A-OFF`	`OFF`
	`15`
	`30`
	`45`
	`60`
		Auto Off Time – Prolongs battery life of scale by turning power off after the set time (in minutes) that the scale is not in use (Section 4.2 on page 15)

`SLEEP`	`OFF`
	`5`
	`15`
	`30`
		Sleep – Time (in minutes) before unit will enter the sleep mode (Section 4.3 on page 16)

`dISPL`	`LO-1`
	`LO-2`
	`Hi-1`
	`Hi-2`
	`Auto`
		LED Display Intensity – Used to set the display brightness (Section 4.4 on page 16)

`StPt 1-8`	`OFF`
	`GrEAt`
	`LESS`
		Setpoint 1 to 8 – Used for warnings or process control (Section 4.5 on page 17)

`totAL`	`OFF`
	`ttLOn`
	`A.LoAd`
	`A.LASt`
	`A.HiGH`
		Total Mode – accumulation of multiple weighments (Section 4.6 on page 18)

Table 4-1. Function Key Settings

Parameters	Choices	Description
F ıɫɛr	OFF LO Hı - ı	Weight Filter – allows the scale to adjust to situations where there may be movement (Section 4.7 on page 19)
Unıɫ	Lb HG	Weight Units – toggle units between pounds and kilograms; Function not available or non-functional in OIML R76 & 1Unit modes (Section 4.8 on page 19)
b. ʟ ıFE	SɫRnd LonG	Battery Life – sets the options for standard or extended battery life (Section 4.9 on page 19)

Table 4-1. Function Key Settings

4.1.1   Set Function Key

The MSI-4260 has one user definable key ([USER]) on the front panel, that can be programmed to one of several functions. The additional function key is available on the RF remote control being used.

To set the function key use the following steps:

1. Press and hold [USER] and [POWER] . FUnc displays.

2. Press [TARE] . The current user key function displays.

3. Press the [USER] to scroll through the available functions.

4. Press [TARE] when the desired function is displayed. A-oFF displays.

5. Press [ZERO] . SɫorE displays, the unit exits setup and stores the settings.

> **Note**   *Press* [POWER] *at any time to cancel the procedure.*

4.1.2   Test

To run a test, press the **F-key** which is programmed to *TEST*. The display will automatically scroll through the following:

Lights all LEDs at once.
Displays SoFɫ followed by the software version number.
Displays bRɫɫ followed by the battery voltage.
Displays d. ɫESɫ followed by the display counting from 00000 to 99999.
Displays C-CRL followed by the C-CAL value.

Other internal tests are performed and if any test fails, an error code will display. See Section 8.1 on page 35 for information on the troubleshooting guide.

To stop the automatic test procedure, press the **F-key** again within two seconds to enable a single step mode. Use the **F-key** to scroll through the available test functions and [TARE] to start or display the individual tests.

Press [ZERO] to exit individual tests, press it again to exit from the test function.

4.1.3   Total

Set the total parameter desired for the **F-key**.

1. If the unit is turned off, press and hold [USER] then press [POWER]

    If the unit is on, press [USER] and [POWER] simultaneously. *FUnc 1* will display.

2. Using the [USER], scroll to *totAL*.

3. Press [TARE]. The currently saved total mode is displayed.

4. Press [USER] to scroll through the choices.

5. With choice displayed, press [TARE] to select. *FiLtr* is displayed.

6. Press [ZERO] to save and exit to weighing mode or press [USER] to continue to another setup menu item.

> 📝 **Note**   *The Total mode must be programmed from the Setup Menus before the USER key will function.*

4.1.4   View Total

F-key activates total weight display followed by the number of samples. With the Total weight is displayed press **ZERO** to clear.

4.1.5   Net / Gross

Switches the display between net and gross modes. Net weight is defined as gross weight minus a tare weight.

> 📝 **Note**   *RF Remote Control, and the MSI-8000 have this function as a standard feature. On the MSI-8000, an F-key must be configured to Net/Gross Mode to enable this feature.*

To switch between net mode and gross mode, press the F-key (set to net/gross function). This will only work if a tare value has been established.

The operator can switch back to gross from net without clearing the tare value. Only clearing or setting a new tare will change the tare value held before switching into *Gross* mode.

OIML Legal-for-Trade units only: **NET/GROSS** key is a temporary action only. Gross weight displays for two seconds and then display returns to net mode. The only way to return to permanent gross readings is to clear the tare (Section 3.4 on page 11).

4.1.6   Peak Hold

Peak hold will only update the display when a higher peak weight reading is established.

The peak hold function uses a high speed mode of the A/D converter allowing it to capture transient weights at a far higher rate than typical scales. Peak hold is cleared and re-enabled with the F-key.

Peak hold is not available on NTEP or OIML Legal-for-Trade certified scales.

4.1.7   Units

Units can be changed in two ways.

*   Program a user function key to units
*   Change the units with the setup menu using the following steps

> 📝 **Note**   *Unit switching is not available on OIML certified Legal-for-Trade scales.*

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4.1.8   High Resolution Test Mode

High Resolution Test Mode displays weight at x10 resolution.

1. Program the [USER] to H ᵢⲅᎬ5 (Section 4.1.1 on page 13).

2. Press [USER] to toggle between normal and x10 resolution display.

All annunciators flash to indicate that the weight display is in x10 resolution test mode and not set to the approved legal-for-trade resolution.

In some cases, the displayed weight in high resolution test mode will require six digits to fully display. In these cases, only the five least significant digits will be displayed. The full weight can be displayed in normal resolution by pressing the function button.

> Ex: 1000.02 kg will display as 000.02 kg.

> **Note** *High resolution test mode is for scale service and diagnostic use only.*
>
> *Increasing the scale display resolution beyond the calibrated value does not increase scale accuracy.*
>
> *High resolution test mode is not available in HB-44 and R-76 standards.*

4.1.9   Print

If a print option is installed this menu choice will appear. See Section 6.1 on page 26 to set up serial print function. Setup is also covered in the remote device manual.

4.2   Auto- Off

The Auto-Off feature prolongs the battery life by powering off the unit when not in use. Whenever a button is pressed or the detected load is in motion exceeding 10d, the time limit is reset. When disabled, the unit will remain on and only turn off when the power key is pressed or the battery dies.

Use the following steps to set the Auto-Off function:

1. Press and hold [USER] and [POWER] . FUnc ᵢ displays.

2. Press the [USER] to scroll to Ꭺ-ᎥFF.

3. Press [TARE] . The current Ꭺ-ᎥFF time displays.

4. Press the [USER] to scroll through the available times.

5. Press [TARE] when the desired time displays. SLEEP displays.

6. Press [ZERO] to exit *Setup* and store the settings.

> **Note** *Press* [POWER] *at any time to cancel the procedure.*

4.3 Sleep

The sleep parameter reduces power consumption by automatically turning off the display during periods of inactivity. While in the sleep mode, the green acknowledge annunciator will blink at a one second rate to indicate the unit is in sleep mode. To wake up the unit, either a button must be pushed (front panel or RF remote) or the weight must change by 5 d or more.

Note *Sleep must be set to less time than the Auto-Off timer.*

1. Press and hold [USER] and [POWER]. *FUnc 1* displays.

2. Press the [USER] to scroll to the *SLEEP* function.

3. Press [TARE]. The current *SLEEP* time displays.

4. Press the [USER] to scroll through the available times.

5. Press [TARE] when the desired time displays.

6. Press [ZERO] to exit setup and store the settings.

Note *Press [POWER] at any time to cancel the procedure.*

4.4 Display Brightness

The *Display* Setup menu is used to set the display brightness. There are four fixed brightness settings and one automatic light sensing brightness setting.

Auto setting will automatically detect the ambient light and adjust the brightness of the display accordingly. Bright light will cause the display to be at the brightest setting. The display brightness will reduce as ambient light reduces.

There are four fixed brightness settings, LO-1, LO-2, HI-1 and HI-2. Lower brightness settings increase battery life.

1. Press and hold [USER] and [POWER]. *FUnc 1* displays.

2. Press the [USER] to scroll to the *d iSPL*.

3. Press [TARE]. The current setting displays.

4. Press the [USER] to scroll through the available settings.

Note *The display brightness changes when each setting is displayed.*

5. Press [TARE] when the desired setting displays. *StPt 1* displays.

6. Press [ZERO] to exit setup and store the settings.

Note *Press [POWER] at any time to cancel the procedure.*

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4.5   Setpoints

The MSI-4260 supports eight setpoints. Common uses of setpoints are for warnings or process control. It comes standard with LED outputs for a triggered set point.

Setpoint 1 is Blue
Setpoint 2 is Green
Setpoint 3 is Red

Figure 4-1. Setpoint LED's

The MSI-4260 has an audible output option that is triggered by Setpoint 1. Contact Rice Lake Weighing Systems for other setpoint output options.

Setpoint	Description
Setpoint Mode	
GrEAt	Indicates the setpoint will trigger when the weight exceeds a set value
LESS	Indicates the setpoint will trigger when the weight is less than a set value
Setpoint Weight Type	
nEt9r	responds to net or gross weight
GroSS	responds to gross weight regardless of the display
totAL	responds to the totaled weight
t-cnt	responds to the total count (number of samples)
LFcnt	responds to the number of times the weight has exceeded 25% of capacity

Table 4-2. Available Setpoint Settings

To set the setpoint:

1. Press and hold [USER] and [POWER] . *Func 1* displays.
2. Press [USER] to scroll to the desired setpoint (StPt 1 - 8).
3. Press [TARE] . The current StPt mode displays.
4. Press [USER] to scroll to the setpoint mode desired.
5. Press [TARE] . The current StPt weight type displays.
6. Press [USER] to scroll to the desired weight type.
7. Press [TARE] . The current setpoint weight value displays.
8. Press [USER] . The first digit will blink.
9. Press [USER] to scroll to the desired number.
10. Press [TARE] . The second digit blinks.
11. Repeat Step 8 – Step 10 until the desired value displays.

Note *To enter a decimal point, press [POWER] while the digit is blinking. To correct a digit, press [ZERO] to step back.*

12. Press [TARE] . The value will stop blinking and the next setup menu item is displayed.
13. Repeat Step 2 – Step 12 to set all the setpoints to be used.
14. Press [ZERO] to exit setup and store the settings.

Note *Press [POWER] at any time to cancel the procedure.*

4.6   Total

For the accumulation of multiple weighments, the Total function used the displayed load, so gross and net readings can be added into the same total.

There are four modes of totalizing: manual and three auto modes. The manual mode requires the **TOTAL** key be pressed with the weight on the scale. The weight will be added to the previously accumulated value. This assures that a weight on the scale is only added to the total once.

Both the manual and three auto total modes require that the weight on the scale return below 0.5% (relative to full scale) of *GROSS ZERO* or *NET ZERO* before the next weighment can be added. Applied weight must be ≥1% of full scale above *GROSS ZERO* or *NET ZERO* before it can be totaled.

Manual Total

The **USER** key under the *MANUAL TOTAL* mode functions in this manner:

- Weight is greater than 1% of capacity and has not been totaled – Pushing the **USER** key will add the current weight to the TOTAL weight. The displayed weight blinks to indicate the weight was accepted. The TOTAL annunciator lights and the Total weight is displayed for five seconds and then the number of samples is displayed for two seconds.
- Current Weight has been totaled – Pushing the **USER** key will display the Total weight for five seconds (View Total) without changing the Total value. The TOTAL annunciator will light during the TOTAL weight display. After five seconds of Total Weight display, the number of samples is displayed for two seconds.
- Weight is less than 1% of capacity – The **USER** key functions as View Total only and functions as View Total until the 1% threshold is exceeded to allow the next addition to the total value.

Auto Total

The **USER** key under the *AUTO TOTAL* mode functions as Auto Total On / Auto Total Off.

The Auto Mode has three variations which are programmed in the Setup menu:

- *A. LoAd* – **AutoLoad** ensures any settled load above the Rise above threshold will be automatically totaled. The scale must fall below the Drop below threshold before the next total is allowed.
- *A. LASt* – **AutoLast** mode takes the last settled weight to auto total with. The total occurs only once the scale goes below the threshold. This allows the load to be adjusted without a total occurring. Once the load is removed, the scale uses the last settled reading for total.
- *A. HiGH* – **AutoHigh** uses the highest settled reading. This is useful for loads that can't be removed all at once.

> **Note**   *Total Mode will not function while the scale is in motion, make sure ◣ ◢ is on. If the system fails to achieve stable readings, increase the filter setting or increase the size of the scale division (d) in the Init Cal procedure.*

Set Total Mode

1. If the unit is turned off, press and hold [USER] then press [POWER]

   If the unit is on, press [USER] and [POWER] simultaneously. *FUnc 1* displays.

2. Using the [USER] , scroll to *totAL*.

3. Press [TARE] . The currently saved total mode displays.

4. Press [USER] to scroll through the choices.

5. With choice displayed, press [TARE] to select. *FiLtr* displays.

6. Press [ZERO] to save and exit to weighing mode or press [USER] to continue to another setup menu item.

4.7 Filter Setup

Changing the filter settings allows the scale to adjust to situations where there is a lot a movement in the structure. If the reading is not stable, it can often be improved by increasing the filter setting. Settling time will be longer as the filter setting is increased. However, the MSI-4260 employs algorithms that speed up large weight changes while still controlling vibration even with high filter settings.

Use the following steps to set up filtering.

1. If the unit is turned off, press and hold [USER] then press [POWER]

    If the unit is on, press [USER] and [POWER] simultaneously. *FUnc 1* will display.

2. Using the [USER], scroll to *F iLtEr*.

3. Press [TARE]. The currently saved total mode is displayed.

4. Press [USER] to scroll through the choices.

5. With choice displayed, press [TARE] to select. *Un it* will be displayed.

6. Press [ZERO] to save and exit to weighing mode or press [USER] to continue to another setup menu item.

4.8 Unit

1. Press and hold [USER] and [POWER]. *FUnc 1* will display.

    If the unit is on, press [USER] and [POWER] simultaneously. *FUnc 1* will display

2. Press [USER] to scroll to *Un it*.

3. Press [TARE] to enter *Un it*.

4. Press [USER] to toggle between lb and kg.

5. With the desired choice displayed, press [TARE] to select.

6. Press [ZERO] to save and exit to weighing mode.

4.9 Battery Life

1. If the unit is turned off, press and hold [USER] then press [POWER]

    If the unit is on, press [USER] and [POWER] simultaneously. *FUnc 1* will display.

2. Using the [USER], scroll to *b. L iFE*.

3. Press [TARE]. The currently saved total mode is displayed.

4. Press [USER] to toggle between the choices.

5. With choice displayed, press [TARE] to select. *FUnc 1* will display.

6. Press [ZERO] to save and exit to weighing mode or press [USER] to continue to another setup menu item.

5.0   Calibration

The MSI-4260 is calibrated using standard weights. It is required that the weight used is at least 10% of full capacity in order to achieve rated accuracy. For example, use at least a 500 kg test weight to calibrate a 5000 kg capacity scale. Although a single span point is usually adequate for rated accuracy, the MSI-4260 supports Multi-Point calibration with up to four span points plus zero.

When adequate test weights are not available, the MSI-4260 can be calibrated using a calculated constant calibration which is referred to as C-Cal. To use C-Cal, a previously generated C-Cal number must be known.

There are three kinds of calibration:

- **Standard Calibration** – Used for maintenance and routine calibration.
- **Initial Calibration** – Used to set up both the capacity and resolution (d) of the scale. It differs from Standard Calibration only in the initial steps. The initial calibration is performed after a calibration reset which completely erases the calibration and setup memory.
- **C-Cal** – Last calculated C-Cal values is known, the MSI-4260 can be calibrated without weights.

5.1   Calibration Switch Access

Use the following steps to access the calibration switch on the MSI-4260 if calibrating the unit using either the standard calibration or the C-Cal calibration.

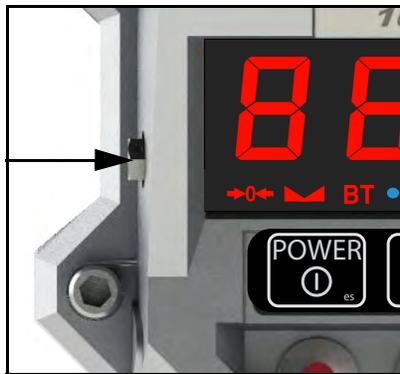1.   Remove the hex seal screw from the MSI-4260.

Figure 5-1. Calibration Switch Seal Screw

2.   Using a small screwdriver, press the Cal switch located behind the hex seal screw. CAL displays.

5.2 Standard Calibration

Use the following steps to calibrate the MSI-4260 using the standard calibration procedure.

1. Press ⬛TARE, *UnLd* will display.

2. Press ⬛TARE when the scale becomes motionless, a blinking *0* is displayed.

3. If the scale is in range *PASS* is displayed, then *LoAd 1* is displayed.

4. Load the scale with a test weight (for a single span point calibration, a test weight of more than 20% of capacity or more is recommended).

5. Press ⬛TARE. The current capacity flashes on the display. If loading the scale with the capacity weight, skip to .

6. Press ⬛USER if using a calibration weight other than capacity. The displays far left digit will blink indicating a number should be entered.

7. Press ⬛USER to scroll the numbers and ⬛TARE to enter each digit.

   Example: Enter 2500 kg on a 5000 kg capacity scale.

   Press ⬛USER two times for the leftmost blinking digit, press ⬛TARE to save that digit selection.

   Press ⬛USER five times for the next blinking digit, press ⬛TARE to save that digit selection.

   Press ⬛TARE to save that digit selection.

   Press ⬛TARE to save the next digit selection. 2500 is displayed.

8. Press ⬛TARE to save the weight entry. If the cal value is within limits, *PASS* is briefly displayed then *LoAd2*.

9. Press ⬛TARE if more cal points are desired or ⬛ZERO if a single point cal is needed.

10. Load the scale the next test weight and press ⬛TARE if the weight value is acceptable.

11. Press ⬛USER to scroll through digit choices and press ⬛TARE to enter the calibration weight value.

12. Press ⬛TARE again to complete the calibration span point. If the cal value is within limits, *PASS* is briefly displayed, then *LoAd3* or *LoAd4* is displayed.

13. Press ⬛TARE to enter an additional span point or ⬛ZERO if finished and the display will show *CAL d* to indicate that the calibration was successful.

14. Press ⬛TARE and the display flashes *C-CAL* followed by the *C-CAL* number.

15. Press ⬛ZERO to store the calibration and *SEtUP* is displayed.

16. Press ⬛ZERO to exit the calibration menus and start up the standard weight display.

17. Replace the hex seal screw that was removed in .

5.3   Initial Calibration

Use this procedure only if the capacity and count-by (d) needs to be modified. The initial steps of the initial calibration will totally erase user setup as well as any previous calibration.

Use the following steps to calibrate the MSI-4260 using the initial calibration procedure.

1. Turn the MSI-4260 off.
2. Remove the hex seal screw using the steps in Section 5.1 on page 20.
3. Press the ***Cal*** switch and the ***Power*** switch on the unit simultaneously and display reads ⌐E5EŁ.
4. Press and hold [TARE] to reset the calibration constants. 5Ur̄Eꟼ is displayed.
5. Press [TARE] to complete the reset and ⊏RⱢ is displayed.
6. Press [TARE] to start the initial calibration and Unit is displayed.
7. Press [TARE] to select the calibration unit.
8. Press [USER] to choose between lb and kg and then press [TARE].
9. Press [TARE] to enter the capacity setting. A capacity of 10000 is the initial value and should not be set no higher than the load cell rated capacity.
10. Press [USER] to change the capacity and the first digit on the display blinks.
11. Press [USER] to scroll through the numbers and then press [TARE] when the desired number is shown.
12. Press [TARE] to store the capacity value. ḋ is displayed.
13. Press [TARE] to begin the scale divisions. Press [USER] to scroll through the recommended scale divisions.
14. Press [TARE] when desired scale division is shown and Uῆᴸḋ will display indicating the scale is ready for calibration.
15. Follow standard calibration procedure in Section 5.2 on page 21 (Step 2 on page 22) to calibrate the MSI-4260.

5.4   Guidelines for Capacity and Resolution

Crane scales are subject to forces that regular floor scales do not see. Many bridge cranes, hoist cranes and mobile cranes lack rigidity and tend to bounce or swing when loads are lifted. For this reason, Rice Lake Weighing Systems recommends that the resolution is kept in the 1:2000 to 1:3000 range. Some improvement in stability can be achieved by increasing the filtering. However, never program the resolution that is far greater than needed. If the MSI-4260 display is never stable, it is recommended that the resolution is reduced and/or filtering increased.

Due to Legal-for-Trade requirements and general scale design criteria, the weight must be stable for certain features to work:

- ZERO – Weight must be stable to be zeroed
- TARE – Weight must be stable to be tared
- TOTAL – Weight must be stable to be added to the total registers

One way to improve the stability is to increase the filtering, at the risk of increasing settling time. The other is to increase the ***d*** (reduce resolution). The third way is to increase the ***Motion Window***. The MSI-4260 defaults to ±1d as a motion window. It can be changed at MSI to a higher value if desired. Often ±3d is chosen for bridge cranes as these tend to have a lot of bounce to them. This of course carries an accuracy penalty adding ±3 d to the total accuracy of the scale if the zero or tare operation happens to capture the weight in a valley or peak.

Setting capacity is dictated primarily by the capability of the load cell. Rice Lake Weighing Systems supplies the *MSI-4260* in many capacities.

📝 **Note** | ***Never set the capacity of the scale higher than the rating of the load cell.***

Due to excellent linearity of the MSI S-Beam load cell, it is acceptable to set lower capacities to better match the crane the MSI-4260 is used on. For example, if the hoist is rated for 9000 lb, use an MSI 10000 lb and MSI-4260 and reset the capacity to 9000 lb so that the scale will indicate overload at 9000 lb instead of 10000 lb. Derating as much as 50% of the capacity is usually acceptable, but the scale may be less stable if the 'd' is decreased.

Due to kg to lb conversions, the capacity of all MSI-4260 systems is rated approximately 20% higher than the rated capacity in pounds. This is to allow the kg capacity to be exactly 1/2 the number of the pound capacity.

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5.5   C-Cal Calibration

When adequate test weights are not available, the MSI-4260 can be calibrated using a programmed constant calibration which is referred to as C-Cal. To use C-Cal, a C-Cal number must be known from a previous calibration. MSI supplies replacement load cells for the MSI-4260 with the C-Cal value stamped on the serial number label. When a calibration is performed with test weights, a new C-Cal is generated. C-Cal can be used when the electronics are replaced to get an approximate calibration that may be suitable for non L-F-T applications.

IMPORTANT *The C-Cal number must be known prior to starting this procedure. For a MSI-4260 with its original load cell, MSI prints this number on the calibration record, the serial number tag and on the calibration log found inside the battery compartment.*

C-Calibration reduces slightly the absolute accuracy of the system if the electronics are replaced or a new load cell is installed and is intended for non-critical use only. Legal-for-Trade installations require that the MSI-4260 is calibrated using test weights. If a system was originally multi-point calibrated, the C-CAL calibration will erase the additional span points, as C-Cal is only a two point calibration (zero and span at 10% of capacity).

Use the following steps to perform a C-Cal calibration.

1. Remove the hex seal screw from the MSI-4260 using the steps from Section 5.1 on page 20.

2. Press [USER] to scroll to the C-Cal menu selection. C-Cal is displayed.

3. Press [TARE] to start the C-Cal procedure. UnLd is displayed indicating that all weight should be removed from the hook.

4. Press [TARE] to set the zero calibration point. A flashing 0 is displayed.

5. If the zero is in range, the scale will display *PASS*, then will display *CCAL?*

6. Press [TARE] and the MSI-4260 is ready for numeric entry of the C-Cal value.

7. Press [USER] to enter the C-Cal value. The far left digit will flash indicating that number should be entered.

8. Press [USER] to scroll the numbers and [TARE] to enter each digit.

    Example: Enter 2500 kg on a 5000 kg capacity scale.

    Press [USER] two times for the leftmost blinking digit, press [TARE] to save that digit selection.

    Press [USER] five times for the next blinking digit, press [TARE] to save that digit selection.

    Press [TARE] to save that digit selection.

    Press [TARE] to save the next digit selection. 2500 is displayed.

9. Press [TARE] to save the C-Cal value. The display will read *PASS* followed by *CAL d*.

10. Press [ZERO] to exit C-Cal setup menu and press [ZERO] again to store the calibration and return to the scale operation and the display will show *StorE*.

5.6 Calibration Setup Menu

The Calibration Setup Menu contains two additional items beyond Calibration:

- Standard menu
- Auto Zero Maintenance menu (Auto0).

In addition, more menus will appear that are transferred from the main setup menu when Legal-for-Trade settings are used.

5.6.1 Standard Menu

Selection	Description
Industrial (indu5)	This is the most common setting for the MSI-4260; With the Industrial standard, you have full range zero, access to units switching, filters, and peak hold
Handbook 44 (Hb-44)	Sets the scale to enable only approved features per the NTEP HB-44 rules and regulations; Access is denied to Peak Hold, and the zero range may be limited; The Filter menu is moved to the Cal Setup Menu, so filters are only accessible through the Cal Seal
R-76 (r-76)	Sets the scale to enable only approved features per OIML R-76; Only kg weight units are available; The zero range is limited to 4% (-1 to +3% relative to Calibrate zero); Net/Gross function is temporary; Once Net weight is established, pushing an F key set for Net/Gross will cause a maximum 5 second display of the Gross weight; You must clear the Tare to display Gross weight constantly; Other metrological aspects are changed to meet R-76 requirements; Only stable weights may be printed; Negative weight display is limited to -20d
One Unit (1unit)	The one unit Standard is exactly the same as Industrial, except units switching is inhibited; This is useful for Metric only countries; Another use of the One Unit standard is to allow the scale to be calibrated in units other than lb or kg, since conversions are eliminated; Contact MSI for more information on the Standards settings

Table 5-1. Standard Menu Selections

Use the following steps to set up a Legal-for-Trade standard settings.

1. Remove the hex seal screw from the MSI-4260 using the steps from and *CAL* is displayed.

2. Press [USER] . *SETUP* is displayed.

3. Press [TARE] to enter the Cal setup menu.

4. Press [TARE] to enter the standard menu. The current standard setting is displayed.

5. Press [USER] to scroll to the desired standard. *1 Unit* is displayed.

6. Press [TARE] to set the standard. *AutoCAL* or the next item in the CAL setup menu is displayed.

7. Press [ZERO] twice to exit setup and store all changes. *Store* is displayed.

5.7   Auto Zero Maintenance

The MSI-4260 employs an auto-zeroing maintenance mechanism to adjust the zero reading to the center-of-zero (COZ). COZ is defined as the weight reading is within 1/4 'd' of zero. AZM continuously adjusts zero to maintain COZ.

It is recommended that AZM is on to maintain the highest accuracy. However, there are circumstances when it should be turned off. This can happen when minor variations of weight occur while picking up scale attachments and the variations fall within the AZM capture window. The AZM capture window (usually 1 'd') and capture time (usually eight seconds) can be adjusted by MSI to meet custom requirements. The settings of AZM are dictated in Legal-for-Trade standards and cannot be adjusted.

Use the following steps to set up the auto zero maintenance.

1. Remove the hex seal screw from the MSI-4260 using the steps from Section 5.1 on page 20 and *CAL* displays.

2. Press [USER] . *SEtUP* is displayed.

3. Press [TARE] to enter the Cal setup menu. *StAnd* is displayed.

4. Press [USER] to scroll to the Auto0 menu. *AUto0* is displayed.

5. Press [TARE] to enter the Auto Zero menu. The current setting (blinking) is displayed.

6. Press [USER] to scroll between the on or off key.

7. Press [TARE] to set the auto zero. *StAnd* is displayed.

8. Press [ZERO] twice to exit setup and store all changes. *StorE* is displayed.

6.0   Communications

The MSI-4260 can communicate with peripheral devices using IEEE 802.15.4 Low Rate WPAN, or 802.11 Wi-Fi protocols, 'b', 'g' or 'n'. Only one communication type can exist at a time. Due to difficulties of dangling RS-232 cables from a hanging crane scale, the RF options are more commonly used.

The MSI-4260 has a single communications port allowing access to the embedded ScaleCore through the terminal access mode or Rice Lake software. The terminal access mode is used for updating scale firmware while Rice Lake software can be used for calibration and configuration, backup and adjusting scale settings. This communications port is not intended for output use.

RF Options

The 802.15.4 transceiver is used to communicate between the MSI-4260 and a MSI-8000 RF or MSI-8004HD Remote Display. The 802.15.4 transceiver is also capable of connecting to any supported device with an 802.15.4 Modem. 802.15.4 operates in the 2.4 GHz ISM band and does not require the end user to obtain a license. 802.15.4 can coexist with other 2.4 GHz systems if caution is taken to isolate antennas at least 10' (3 m) from the crane scales and if an MSI-8000 RF or MSI-8004HD Remote Display acts as the network coordinator.

The 802.11 Wi-Fi option communicates directly with a standard RF access point. This option is covered by the MSI Wi-Fi setup addendum (PN 182816). WiFi is used for special applications and is pre-configured before shipping.

6.1   Printer / Serial Output Setup

All RF linked device weight modes are available in user formatted form.

Communications port settings are independent of print settings in connected displays/indicators which only in the MSI-4260.

Parameters	Choices	Description
L iStn	- -	Listen – Connects with an RF remote
oUt-P	Port.0 rF	Output Port – Select output port for print
StrnG	- -	Serial String – For use in printing (Section 6.1.1)
Cntrl	USEr LoAd Cont inUoUS OFF	Control – Print mode selected (Section 6.1.2 on page 27)
rAtE	0-65535	Rate – Output rate in seconds, 0 is the fastest possible setting

Table 6-1. Print Parameters

6.1.1 Standard Print Strings

Commands that can be used to format gross, net and print formats are shown below.

Print String	Choices	Description
1	Current load	Fixed output length: 16. Leading zeros suppressed except for the least significant digit (LSD); <TTTTTTT><SP><UU**><**SP><MMMMM**><**CRLF>
2	Net load	Fixed output length:16. Leading zeros suppressed except for the LSD; <TTTTTTT><SP><UU><SP><NET><SP><SP><CRLF>
3	Gross load	Fixed output length: 16. Leading zeros suppressed except for the LSD. <TTTTTTT><SP><UU><SP>GROSS<CRLF>
4	Tare Weight	Fixed output length:16. Leading zeros suppressed except for the LSD; <TTTTTTT><SP><UU><SP>TARE<CRLF>
5	Total Weight	Fixed output length: 16. Leading zeros suppressed except for the LSD; <TTTTTTT><SP><UU><SP>TTL><CRLF>
6	Number of Samples Totaled	Fixed output length: 16. Leading zeros suppressed except for the LSD; <SP><SP><SP><SP><SP><SP><SSSSSSS><SP><T-CNT>SP>CRLF>
7	Current Weight Mode	Net, Gross, Peak, etc; <SP><MMMMM>CRLF>
8/9	Carriage Return/Line Feed	Used to add a space between print records; <CRLF>

Table 6-2. Standard Print Strings

Combinations of the standard print strings can be entered in the string number entry screen.

Example: To get a NET, GROSS, TARE printout with a space between records, enter 2349.

The ScaleCore Connect software can also be used to create custom output strings with a combination of standard print string commands (Table 6-3). ScaleCore Connect can be downloaded from **www.ricelake.com**.

Command	Description
<T>	Load data
<U>	Units
<M>	Load mode (lb/kg)
<CRLF>	Carriage return line feed
<SP>	Space

Table 6-3. Standard Print Strings Commands

The serial output is configured as 9600 baud, Xon/Xoff handshaking, no hardware handshaking, 1 stop bit, no parity. Other baud rates are possible by special order only.

6.1.2 Control Modes

The user can select three control modes which are described below.

Mode	Description
USEr	Printing is controlled by the operator using [USER key] . if set to **Print** mode; If using a remote device, there may be a dedicated **PRINT** key (**F-key 3**) available
LoAd	One print occurs when a stable load is read. The scale must then return to near zero before another print will occur; *Note: Other configurations of loads are available using the ScaleCore Connect software. It can be downloaded from www.ricelake.com*
Cont inUoUS	The MSI-4260 will continuously output the data at a rate specified in the rate parameter (up to 65,535 seconds); Setting the interval to 0 will set an interval as fast as the system can go
OFF	Printing is disabled. Power consumption is lower with the print off

Table 6-4. Control Modes

6.1.3   Printer Output Setup

Use the following steps to set up the printer output.

1. Press [TARE] and [USER] at the same time. Pr int is displayed.

2. Press [TARE]. L $i5tn$ displays.

3. Press [TARE]. The current setting flashes.

4. Press [TARE]. $OUt-P$ displays.

5. Press [TARE]. The current setting flashes.

6. Press [USER] to toggle between $PortO$ and rF.

7. When the desired setting is displayed, press [TARE]. $5trnG$ displays.

8. Press [TARE] to enter.

9. Enter the number using [USER] to scroll through numbers and [TARE] to set the string number desired.

10. When set, press [TARE] again. $cntrl$ displays.

11. Press [TARE] to enter. Current setting flashes.

12. Press [USER] to scroll through the settings. ()

13. When desired setting is displayed, press [TARE]. $rAtE$ displays.

14. Press [TARE] to enter.

15. Enter the number using [USER] to scroll through numbers and [TARE] to set number.

16. Press [TARE] again. L $i5tEn$ displays.

17. Press [ZERO] twice to save settings. $5torE$ displays briefly and exits setup.

> 📝 **Note**   *When entering numbers, pressing* [ZERO] *will step back a digit for corrections.*

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6.2 RF Network Setup

The MSI-4260 uses 802.15.4 transceivers to communicate with an MSI-8000 or MSI-8004HD Remote Display or another supported device with an 802.15.4 Modem.

> **Note** *Ensure a relatively clear transmission path exists between the devices to be connected. Radio signals travel primarily by line of sight (LOS), obstructions between stations may degrade the system performance.*

6.2.1 802.15.4 RF Network Setup

When equipped with the 802.15.4 option, the MSI-4260 can connect with an MSI-8000 or MSI-8004HD Remote Display or another supported device with an 802.15.4 Modem.

Choices	Parameters/Range	Description
On. OFF	On OFF	Enable RF – Affects continuous mode only
Sc id	0-254	ScaleCore ID – Used to identify each ScaleCore device in a piconet, must not be duplicated within the same RF Channel
Chnl	2-23	RF Channel – Establishes the base network that all interconnected devices must match, range 12-23
nEt id	0-99999	Network ID – A 64 bit number that all interconnected devices must match; The MSI-4260 limits this number to a max of 5 digits in a range of 0-99999 *Note: Do not use a small number here to help avoid other 802.15.4 networks that default to a Network ID of 0 Range 0-99999*
tYPE	2bEE OthEr	Connection Type – Type of card being used *Note: 2bEE refers to XBee 802.15.4 RF card; Both XBEE 2SC, XBee 3 and XBee 3-Pro use the 2bEE parameter*
HoLd	On OFF	Setting Hold to On keep power to the radio even when the scale is turned off; This is required if the Rugged Remote or a remote display will be used to turn the MSI-4260 on; This causes some battery to drain when the scale is off; Hold should be set to off unless this is require in order to maximize battery life

Table 6-5. RF Menu Parameters

To configure RF Network:

1. Press the [TARE] and [USER] keys at the same time. *Pr int* displays.

> **Note** *bUSY may flash momentarily before entering the communications menu.*

2. Press [USER]. *rF* displays.

3. Press [TARE]. *On. OFF* displays.

4. Press [TARE] to enter parameter. The current value flashes.

5. Press [USER] until *On* displays.

6. Press [TARE]. *Sc id* displays.

7. Press [TARE]. The current ID flashes. If SCID is correct, continue to .

8. Enter the ID using [USER] to scroll through numbers and [TARE] to set number.

9. When ID is set, press [TARE] again. *Chnl* displays.

10. Press [TARE]. The current channel flashes. If the channel number is correct continue to 12.

11. Enter the channel using [USER] to scroll through numbers and [TARE] to set number.

12. When channel is set, press [TARE] again. ⁿEt id displays.

13. Press [TARE]. The current net ID flashes. If the net ID is correct, continue to 15.

14. Enter the network ID using [USER] to scroll through numbers and [TARE] to set number.

15. When the Net ID is set, press [TARE] again. tYPE displays.

16. Press [TARE] to enter parameter. The current value flashes.

17. Press [USER] until 2bEE displays.

18. Press [TARE]. Hold displays.

19. Press [TARE] to enter parameter. The current value flashes.

20. Press [USER] until desired setting displays.

21. Press [TARE]. On. OFF displays.

22. Press [ZERO] twice to save and exit to **Weigh** mode.

Note *When entering numbers, pressing* [ZERO] *will step back a digit for corrections.*

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6.2.2 Hold Feature

The hold feature is used to keep the modem on even when the display is off. It is used if desired with a rugged remote or a remote display.

To Enable it follow these steps:

1. Press [TARE] and [USER] simultaneously. *Pr int* displays.

2. Press [USER] . *rF* displays.

3. Press [TARE] . *On. OFF* displays.

4. Press [TARE] to enter *On. OFF*.

5. Press [TARE] to select *On*.

6. Press [USER] to scroll to *Hold*.

7. Press [TARE] to enter the *Hold*.

8. Press [TARE] to select *On*.

9. Press [ZERO] twice to store settings and return to Weigh mode.

6.3 Radio Compliance

All radio options meet FCC and international radio compliance per the certification information listed in this section.

These modules may have additional international certifications that are not listed in this section.

Please contact Rice Lake Weighing Systems if you require operation in a jurisdiction that is not listed.

6.3.1 802.15.4 (XBee 3 and XBee 3-PRO)

FCC Statement

Contains FCC ID: MCQ-XBEE3

International Certifications

Canada: Radio Certificate Number: IC 1846A-XBEE3

Australia: RCM

Brazil: ANATEL 06329-18-01209

EU (XBee 3 only): Yes, when used with CE approved products

Japan (XBee 3 only): R210-119309

Mexico: IFETEL (IFT) RCPDIXB19-1820

South Korea (XBee 3 only): R-C DIG-XBEE3

6.3.2   802.15.4 (XBee 2SC)

FCC Statement

Contains FCC ID: MCQ-S2CTH

International Certifications

Canada: Radio Certificate Number: IC 1846A-S2CTH

Australia: RCM

Brazil: ANATEL 0616-15-1209

EU: Yes, when used with CE approved products

Japan: R210-105563

Mexico: IFETEL (IFT) RCPDIS219-1821-A1

South Korea: MSIP-CRM-DIG-XBee-S2C-TH

6.3.3   Wi-Fi

FCC Statement

Contains FCC ID: T9J-RN171

International Certifications

Canada: Radio Certificate Number: IC 6514A-RN171

Korea: Radio Certificate Number: KCC-CRI-029-RN-171

Europe: The product is compliant with the following standards and/or other normative documents:

- EN 300 328 : V1.8.1 (2012)
  This product is compliant with the following standards and/or other normative documents:
  Safety (article 3.1A) EN 60950-1:2006+A11:2009+A1:2010+A12:2011
  EMC (article 3.1b) EN 301 489-1 : V1.9.2 (2011) In accordance with the specific requirements of ETSI EN 301 489-17: V2.2.1 (2012)

6.3.4   Bluetooth

FCC Statement

Contains FCC ID: T9J-R41-1

International Certifications

Canada: Radio Certificate Number: IC 6514A-RN411

Europe: This product is compliant with the following standards and/or other normative documents:

- EN 300 328-1
- EN 300 328-2 2.4GHz

6.3.5   FHSS (Frequency Hopper Spread Spectrum)

FCC Statement

Contains FCC ID: HSW-DNT24

International Certifications

Canada: Radio Certificate Number: IC 4492A-DNT24

ETSI Certified

7.0   Optional Rugged Remote

The MSI-4260 with an installed RF modem can be controlled with an optional Rugged Remote (PN 173014). The Rugged Remote is a transmit only device that can be used to perform basic scale functions. The range may vary up to 100' or more depending on room conditions and line of sight.

The RF modem in the MSI-4260 must be configured to accept communication from the Rugged Remote, contact Rice Lake Weighing Systems for pairing requirements.

> **Note**   *A Rugged Remote is paired to an individual device and cannot be reprogrammed in the field.*

Figure 7-1. Rugged Remote

7.1   Operation

The Rugged Remote is paired to a single ScaleCore RF device and replicates the front panel buttons. Slight variations between each device's buttons will result in different operation in the Rugged Remote. See Table 7-1 for corresponding buttons for the Rugged Remote and the connected device.

> **Note**   *The Rugged Remote can only be paired to a single ScaleCore device. Reprogramming to configure communication to a different ScaleCore device can only be performed at the factory or with the purchase of additional RF modems.*

Rugged Remote	MSI-4260	Description
		Power
		Zero
		Tare
		Function

Table 7-1. Corresponding Buttons

7.1.1 Power

The Rugged Remote can be enabled to turn on and off the ScaleCore device it is paired remotely. The hold function must be enabled in the MSI-4260 (Section 6.2.2 on page 31).

| Note | *The Hold feature causes the device's modem to stay on and continuously draw from the battery, even when the device is turned off, resulting in decreased battery life.* |

7.1.2 Zero

Press [ZERO] to remove small deviations in zero when the MSI-4260 is unloaded (Section 3.3 on page 10).

This key is not programmable.

7.1.3 Tare

Press [TARE/F1] to tare the MSI-4260 is unloaded (Section 3.4 on page 11).

7.1.4 Programmable Function Keys

[TARE/F1] and [FCN/F2] are programmable in the MSI-4260. Function is defaulted to Test in the MSI-4260. See Section 4.1.1 on page 13 to configure the MSI-4260 function key for Rugged Remote operation.

7.2 Conflict and Jamming Considerations

It is important to understand that only one transmitter at a time can be activated within a reception area. While the transmitted signal consists of encoded digital data, only one carrier of any frequency can occupy airspace without conflict at any given time. This is not to say that there cannot be multiple remote controls for the unit, but rather that two cannot be used simultaneously.

7.3 FCC Compliance

The Rugged Remote has 802.15.4 certification (Section 6.3 on page 31).

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8.0 Troubleshooting/Maintenance

8.1 Troubleshooting

Problem	Possible Cause	Solution
The display is blank when the **POWER** button is depressed	Discharged battery	Recharge the battery; Allow at least four hours charge
	Defective battery	Replace the battery
	Corroded battery or battery contacts	Clean the battery contacts
	Defective switch or circuit board	Requires authorized service
The display does not function properly, the front panel button does not function normally or the scale will not turn off	Improperly updated software	Reinstall the software
	Faulty circuit board	Requires authorized service
	Loose connectors	Requires authorized service
The scale does not respond to weight changes	Out of calibration	Calibrate the unit
	Faulty load cell	Replace the load cell
	Load cell connector	Check the connector and wires
The display over ranges below 100% capacity	Tared weight is added to load to determine overload point	Return to gross weight mode
	Zero requires adjustment	Rezero the scale
	Too much weight has been zeroed	Rezero the scale
The display drifts	AZM (Auto0) is turned off	Turn AZM on
	Rapid temperature changes such as moving the scale from indoors to outdoors	Wait until the scale temperature has stabilized
The displayed weight shows a large error	Scale not zeroed before load is lifted	Zero the scale with no load attached
	lb/kg units causing confusion	Select the proper units
	Requires recalibration	Recalibrate the unit
The display reading is not stable	Excessive vibration in crane system	Increase filtering or increase 'd' in Cal
	Excessive side loading	Improve load train symmetry
	Load cell faulty	Check the load cell connections
The display toggles between "Error" and "Load"	Weight exceeds capacity	Reduce weight immediately
	Faulty load cell or wiring	Check load cell and load cell wiring
The display toggles between "Error" and "UnLd"	Weight in below the zero range	If the scale is in compression, remove the source
	Calibration faulty	Recalibrate
	Faulty load cell or wiring	Check the load cell connections
The display toggles between "Error" and "A2DLo"	A/D is saturated negative	Check the load cell and load cell wiring
Display toggles between "Error" and "buttn"	A key is stuck or is being held down	Check switches for damage
		Ensure that a remote is not transmitting continuously
RF Remote does not work	Units are not paired	See Section 6.2 on page 29
Some RF remote keys do not work but the ACK light blinks	The keys were not enabled during the setup process	Enable the keys by running the transmitter and receiver address procedures
Lo Batt is blinking	The battery is low	Recharge the battery
Unit turns on, then immediately turns off	The battery is low	Recharge the battery
Weight will not zero	The system not stable	The stable annunciator must turn on for Zero to function; Increase the filtering for more stability
		Increase the filtering for more stability
	Zero is out of range	Legal-for-Trade units have limited zero range; Reduce the weight or use Tare instead
The weight will not Zero, Tare or Total	The system is not stable	Wait for Stable annunciator to turn on, or if in a mechanically noisy crane, increase the filtering or increase the size of the scale increment "d". It is also possible to increase the motion window; Contact MSI if you have a problem getting the MSI-4260 to zero, tare, or total due to stability issues
Setpoint lights blink	Setpoint is enabled and the trigger point has been reached	Disable set points if they are not needed
Manual total does not work	A Function key is not set to "Total"	Set up Func1 or Func2 for "Total"
	The weight must be stable	Increase filtering for more stability
Auto Total does not work	The weight must be stable	Wait for the stable annunciator to turn on, or Increase filtering for more stability
	Weight thresholds not reached	Must exceed 1% of capacity for autototal to work; Must drop below 0.5% of capacity for additional weighments to register

Table 8-1. Troubleshooting

8.2   Service Counters

WARNING *Only a Rice Lake Weighing Systems factory representative can reset the service counters, as these are an important safety warning feature. A thorough load train inspection is necessary to ensure product safety.*

Service Counters are important safety warning features and can only be reset at the factory by certified Rice Lake personnel.

As part of the reset process, the service technician will perform a thorough load train inspection to ensure user safety and confirm that the product is ready to be returned for regular service.

See the Crane Scale Safety and Periodic Maintenance Manual (PN 153105) for proper loading techniques to improve the safety and longevity of your MSI Overhead Weighing Product. Download the Crane Scale Safety and Periodic Maintenance Manual (PN 153105) at www.ricelake.com.

The MSI-4260 maintains two service counters for safety.

- The first one counts the number of times the scale has been overloaded
- The second counter counts lifts above 25% of capacity

These counters serve to warn the user to inspect the load train after a number of overloads, also when there is a chance of fatigue failure. The power up routine will be interrupted when the lift counter exceeds 16383 lifts or the overload counter exceeds 1023 overloads. If the screen displays LFCnt when unit is powered on:

1. Press [TARE] to display the 25% lift counter.

2. Press [TARE] again to see the overload lift counter.

3. Press [ZERO] to acknowledge the warning and return to standard scale operation.

Note *The power up warning message will not appear again for another 16383 lifts (or 1023 overloads).*

8.2.1   Access the Service Counters

Use the following steps to access the service counters.

4. Program a user function key to be tESt (Section 4.1.2 on page 13).

5. Press [USER] .

6. Press [TARE] . The display flashes

    - LFCnt (for Lift Counter) followed by the number of times the weight has exceeded 25% of capacity
    - OLCnt (for Overload Counter) followed by the number of times the weight has exceeded capacity
    - C-CAL followed by the C-Cal value

    Then the display returns to the ***Weigh*** mode.

    To stop the scrolling and step through them slowly proceed to Step 7.

7. Press [USER] immediately after [TARE] is pressed.

8. Press [USER] to scroll through counters.

9. Press [TARE] to enter the counter, the value is displayed.

10. Press [ZERO] to return to weigh mode.

Note *After service counters are viewed a few times, the automatic warning stops, but counters continue to monitor lifts.*

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8.3 MSI-4260 Port-A-Weigh Dimensions
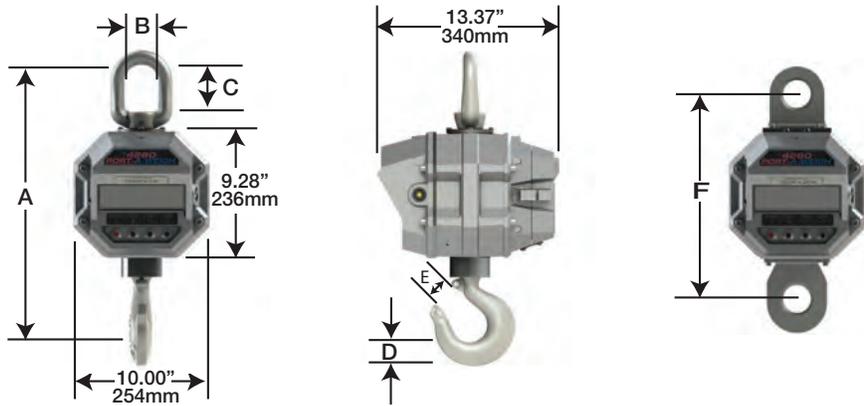
Capacity	Resolution**	A*	B*	C*	D*	E*	F	Hook	Eye Nut or Shackle	Safety Factor	Shipping Wt
500 lb 250 kg	0.2 lb 0.1 kg	18.3 in 465 mm	2.25 in 57.1 mm	3.06 in 77.7 mm	1.44 in 37.0 mm	1.41 in 36.0 mm	– –	5 ton alloy swivel	CR#7 eyenut	>5 >5	53 lb 24 kg
2,000 lb 1,000 kg	1 lb 0.5 kg	18.3 in 465 mm	2.25 in 57.1 mm	3.06 in 77.7 mm	1.44 in 37.0 mm	1.41 in 36.0 mm	– –	5 ton alloy swivel	CR#7 eyenut	>5 >5	53 lb 24 kg
5,000 lb 2,500 kg	1 lb 0.5 kg	20.5 in 521 mm	2.50 in 64.0 mm	3.50 in 89.0 mm	1.81 in 46.0 mm	1.69 in 42.9 mm	– –	7 ton alloy swivel	CR#8 eyenut	>5 >5	62 lb 28 kg
10,000 lb 5,000 kg	2 lb 1 kg	20.5 in 521 mm	2.50 in 64.0 mm	3.50 in 89.0 mm	1.81 in 46.0 mm	1.69 in 42.9 mm	– –	7 ton alloy swivel	CR#8 eyenut	>5 >5	62 lb 28 kg
20,000 lb 10,000 kg	5 lb 2 kg	28.5 in 724 mm	4.00 in 101.6 mm	6.25 in 159 mm	2.62 in 66.5 mm	2.41 in 61.2 mm	– –	15 ton alloy swivel	CR#11 eyenut	>7 >6.5	105 lb 47 kg
30,000 lb 15,000 kg	10 lb 5 kg	30.0 in 762 mm	4.00 in 101.6 mm	6.25 in 159 mm	3.00 in 76.2 mm	3.19 in 81.0 mm	– –	22 ton alloy swivel	CR#11 eyenut	>5 >5	125 lb 55 kg
50,000 lb 25,000 kg	10 lb 5 kg	41.0 in 1041 mm	5.00 in 127 mm	6.00 in 152 mm	3.62 in 92.0 mm	3.63 in 92.0 mm	15.0 in 381 mm	30 ton alloy swivel	CR25ton shackle #2130	>5 4.9	235 lb 106 kg
70,000 lb 35,000 kg	20 lb 10 kg	43.2 in 1097 mm	5.00 in 127	6.00 in 152 mm	4.56 in 116 mm	3.75 in 95.0 mm	15.0 in 381 mm	37 ton alloy swivel	CR40ton alloy shackle #2140	4.75 4.3	270 lb 121 kg
100,000 lb 50,000 kg	20 lb 10 kg	52.1 in 1324 mm	5.75 in 146 mm	6.65 in 169 mm	5.06 in 129 mm	4.25 in 108 mm	16.25 in 413 mm	45 ton alloy swivel	CR55ton alloy shackle #2140	4.5 4	420 lb 189 kg
								60 ton alloy swivel	CR55ton alloy shackle #2140	5 4.5	510 lb 231 kg
								75 ton alloy swivel	CR55ton alloy shackle #2140	5 4.5	630 lb 286 kg

CR = Crosby or equivalent.

* These dimensions also apply to 50/70/100000 lb. units with hook and shackle.

** Resolution subject to change for NIST and OIML approved units.

Alternate Hooks for 100,000 lb

Figure 8-1. MSI-4260 Product Dimensions

9.0 Specifications

Accuracy

± (0.1% +1 d) of applied load

Resolution

3,000 to 5,000 d standard (up to 10,000 d available)

Enclosure

NEMA Type 4, IP66 marine grade 356 alloy anodized cast aluminum

Lifting Eye, Shackle and Hook

Crosby® or equal with 360° thrust-bearing swivel hook

Design Overload

200% Safe / 500% Ultimate (except where noted)

Functions

Power: Turns unit on or off
Zero: Zeros applied load up to 100% of capacity (limited range in NTEP Certified configuration)
Tare: Tares applied load and displays weight in Net mode F1: Programmable as test, units, net/gross, total and peak hold

Display

Five-digit, 1.2 in (30mm) LED with programmable brightness control

Displayable Units

Pounds or kilograms selectable

Annunciators

COZ, Net, Gross, Total, Peak, Low Battery, lb/kg, Motion, Setpoints

Power

12 volt rechargeable battery. 115/230 VAC battery charger is included

Operating Time

Up to 200 hours between charging with typical use, less with RF Modem option

Operating Temperature

Legal-For-Trade: 14ºF – 104ºF (-10ºC – 40ºC)
Industrial: -10ºF – 122°F (-40ºC – 50ºC)

Auto-Off Mode

Select for 15, 30, 45 minutes, 1 hour or Off

Auto Sleep Mode

Power down during non-use and power up with weight change or any key press

Service Counters

Counts number of lifts over percentage of capacity and lifts over capacity

Calibration

Digital

Filtering

OFF, LO, HI-1, HI-2 selectable

Warranty

One-year limited warranty

Approvals

CoC Number: 88-098