# MSI-6360

*Trans-Weigh Crane Scales*

# Technical Manual



RICE LAKE
WEIGHING SYSTEMS

# Revision History

This section tracks and describes manual revisions for awareness of major updates.

| Revision | Date | Description |
|----------|------|-------------|
| A | June 13, 2023 | Initial manual release with product launch |
| | | |
| | | |

*Table i.  Revision Letter History*

***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.***

# Contents

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

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# 1.0    Introduction

This manual is intended for use by service technicians responsible for installing and servicing the MSI-6360 Trans-Weigh crane scale.

Configurations and calibrations of the scale can be accomplished using ScaleCore Connect software or RF remote displays. See Section 4.0 on page 26 and Section 5.0 on page 44 for information about setup and configuration of the MSI-6360.

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

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

## Safety 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-6360. Any repairs are to be performed by qualified service personnel only.*

*The MSI-6360 Trans-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.*

## 1.1    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.

## 1.2    Overview

A single MSI-6360 Trans-Weigh can be used to communicate with a ScaleCore-based remote display. A paired transmitter and receiver can be used to wirelessly send weight data to any ScaleCore compatible remote display.



*Figure 1-1. MSI Trans-Weigh 6360 Series*

## 1.3    Display
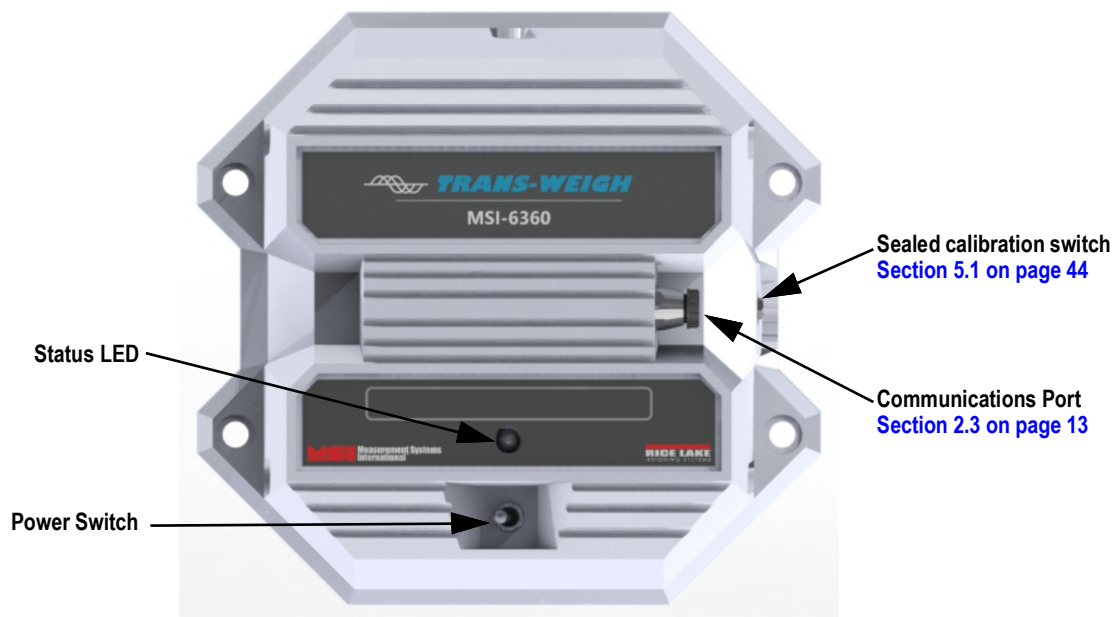


*Figure 1-2. MSI-6360 Front Panel*

| Item No. | Description |
|:---:|:---|
| 1 | Status LED – Indicates state of unit power<br>    Steady short green blinks – RF connected, good battery (or AC power)<br>    Two short red blinks then a pause – RF connected, low battery<br>    Four short red blinks then a pause – RF connected, very low battery<br>    Steady long red blinks – RF disconnected and good battery (or AC power)<br>    Long red blink, short red blink then a pause – RF disconnected and low battery<br>    Long red blink, three short red blinks – RF disconnected and very low battery<br>    Steady red – Load cell fault (overload/underload/uncal/error/etc.)<br>    Five green blinks per second – Calibration mode<br>    Steady Green – Standby mode |
| 2 | Power Switch<br>    Press & release – Turns unit on/off |

*Table 1-1.  Key Functions*

# 2.0    Installation

This section details unpacking and installation of the MSI-6360 Trans-Weigh crane scale.

⚠️ *WARNING: Refer to the Crane Scale Safety and Periodic Maintenance Manual (PN 153105) for safe loading and rigging guidelines when installing the model MSI-6360.*

*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-6360 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-6360 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-6360, ensure that all assembly parts are accounted for. Check the MSI-6360 for any visible damage. If any parts were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately. If the MSI-6360 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-6360 is powered by a 12V Sealed Lead Acid (SLA) rechargeable battery. This battery will operate for up to 85 hours 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-6360 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-6360 depends on a number of factors:
- The age of the battery
- The condition of the SLA battery
- Ambient temperature

The MSI-6360 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-6360 electronics, do not store the MSI-6360 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-6360 powers off.*

*If MSI-6360 is not going to be 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-6360 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. To charge the battery:

1.    Remove the battery from the MSI-6360 ().
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 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.*

*Extended use at temperatures below 14°F (-10°C) and above 104°F (40°C) may reduce battery life.*

### 2.2.3 Battery Replacement

1. Turn the MSI-6360 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.
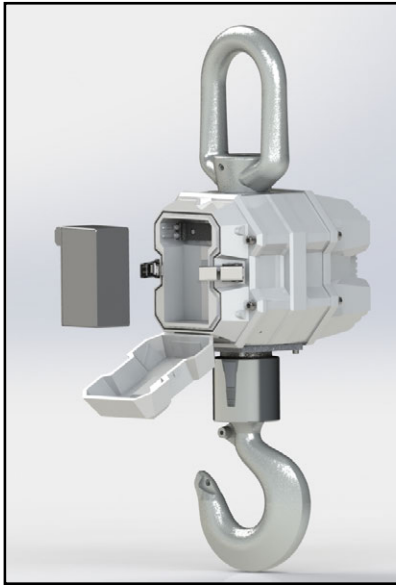


*Figure 2-2. Remove Battery*

**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.*

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## 2.3    Communications Port

The MSI-6360 has a single communications port allowing access to the embedded ScaleCore through the terminal access mode or ScaleCore Connect. The terminal access mode is used for updating scale firmware while ScaleCore Connect 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-6360 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.

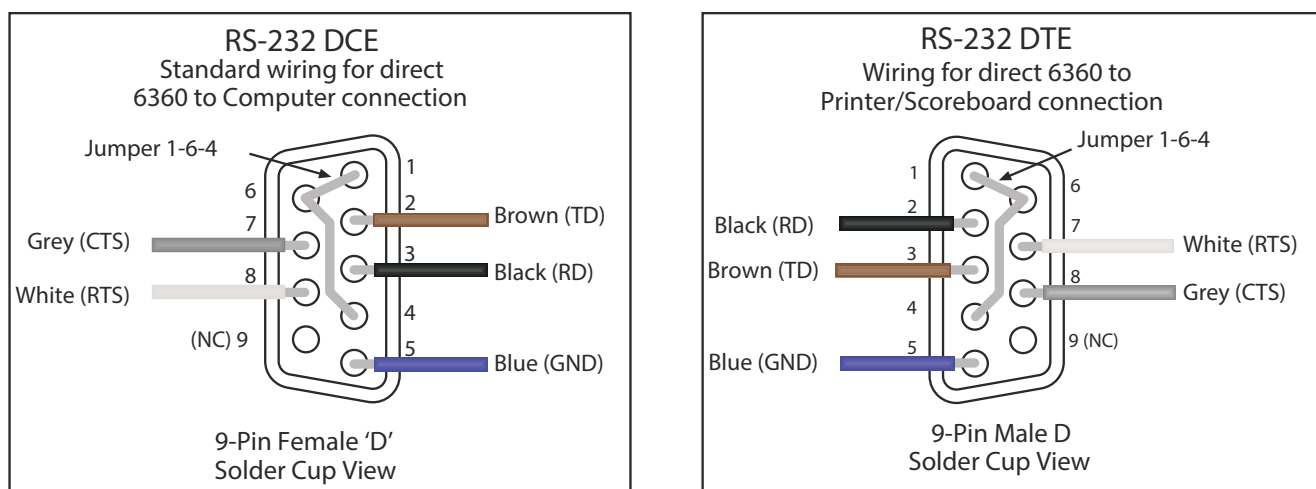| Signal | Wire Color |
|---|---|
| TxD (transmitted data) | Brown |
| RxD (received data) | Black |
| CTS (clear to send) | Grey |
| RTS (request to send) | White |
| GND | Blue |
| PG (protective ground) | Drain Wire |

*Table 2-1.  RS-232 Wiring Code*



*Figure 2-3. Comm Port Cable Assignments Examples*

## 2.4    RF Connection

The RF modem in the MSI-6360 must be configured to accept communication from a remote device. For information about RF connections, see Section 4.4.3 on page 28.

## 2.5    Servicing

Rice Lake's dealer network provides both on-site and depot servicing of MSI-6360 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-6360. 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.
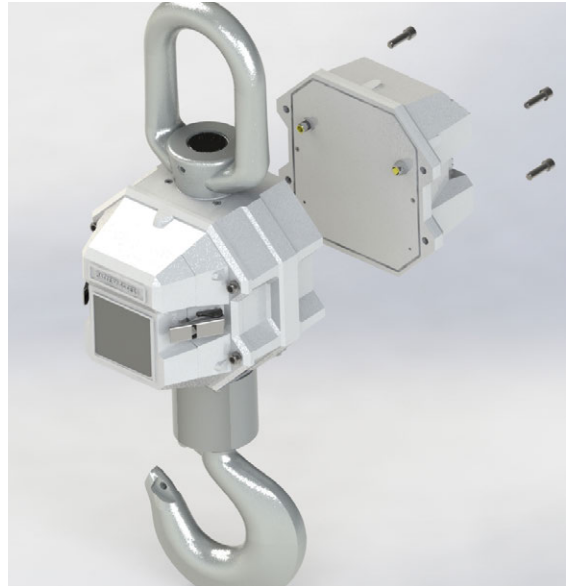

*Figure 2-4. Remove Front Casting*

### 2.5.1    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.

### 2.5.2    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.*

## 2.6 Replacement Parts
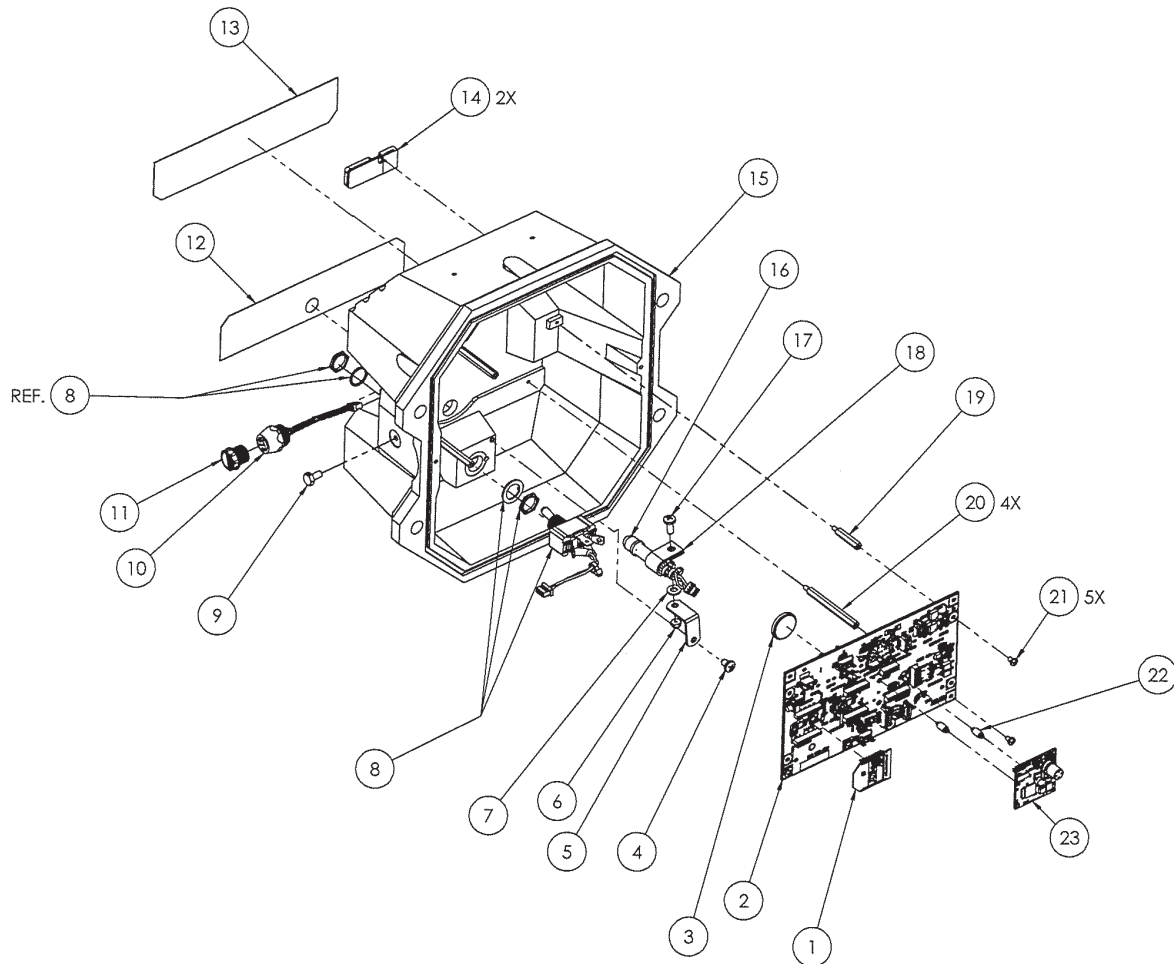
### 2.6.1 MSI-6360 Front Casting Assembly

*Figure 2-5. MSI-6360 Front Casting Assembly*

| Item | Part No. | Description |
|------|----------|-------------|
| 1 | 144773 | Radio module Xbee-pro |
| 2 | 212607 | PCA 6360 no display |
| 3 | 71408 | Battery, lithium CR2032 |
| 4 | 146606 | Screw pan head 8-32 x 1/4 stainless steel |
| 5 | 215863 | Bracket angle steel #8 |
| 6 | 146629 | Nut, hex 8-32 nyloc stainless steel |
| 7 | 146531 | Washer flat #8 stainless steel |
| 8 | 215842 | Cable assembly, toggle switch |
| 9 | 142591 | Screw seal dr hh 8-32 |
| 10 | 139449 | Cable assembly, comm serial |
| 11 | 143352 | Conn closure cap IP68 |
| 12 | 215973 | LED/capacity label 6360 |
| 13 | 215948 | Label descriptive 6360 |
| 14 | 201823 | Antenna assembly 2.4 GHz patch |
| 15 | 215840 | Front casting machined |
| 16 | 215912 | Cable assembly, red/green LED |
| 17 | 146608 | Screw pan head 8-32 x 7/16 Phillips |
| 18 | 143075 | Cable clamp .375 diameter |
| 19 | 215938 | Standoff 3/16 hex x 0.875 |
| 20 | 215935 | Standoff 3/16 hex x 2.00 |
| 21 | 146593 | Screw pan head 4-40 x 3/16 Phillips |
| 22 | 144929 | Spacer miniature dual |
| 23 | 153429 | PCA ScaleCore3 1-channel |

*Table 2-2.  MSI-6360 Front Casting Assembly Components*

### 2.6.2 MSI-6360 Bulkhead Assembly
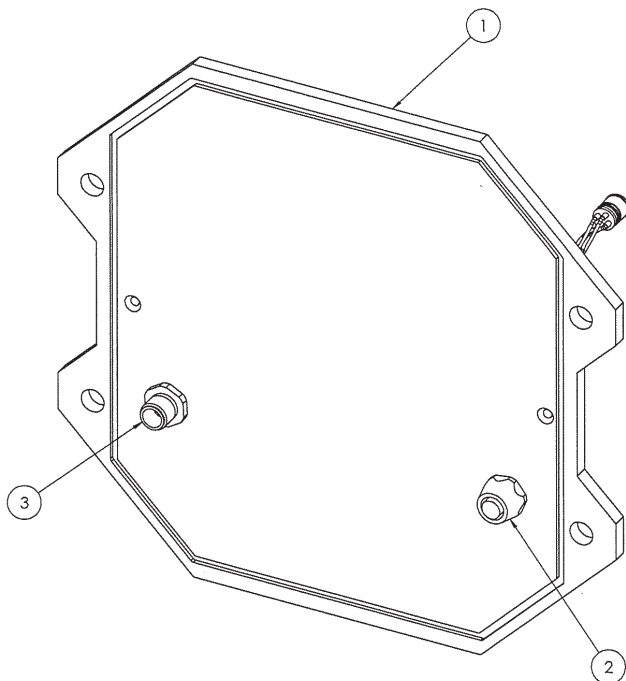


*Figure 2-6. MSI-6360 Bulkhead Asembly*

| Item | Part No. | Description |
|------|----------|-------------|
| 1 | 215839 | Front bulkhead |
| 2 | 139471 | Cable assembly, bulkhead load |
| 3 | 139472 | Cable assembly, bulkhead |

*Table 2-3.  MSI-6360 Front Casting Assembly Components*
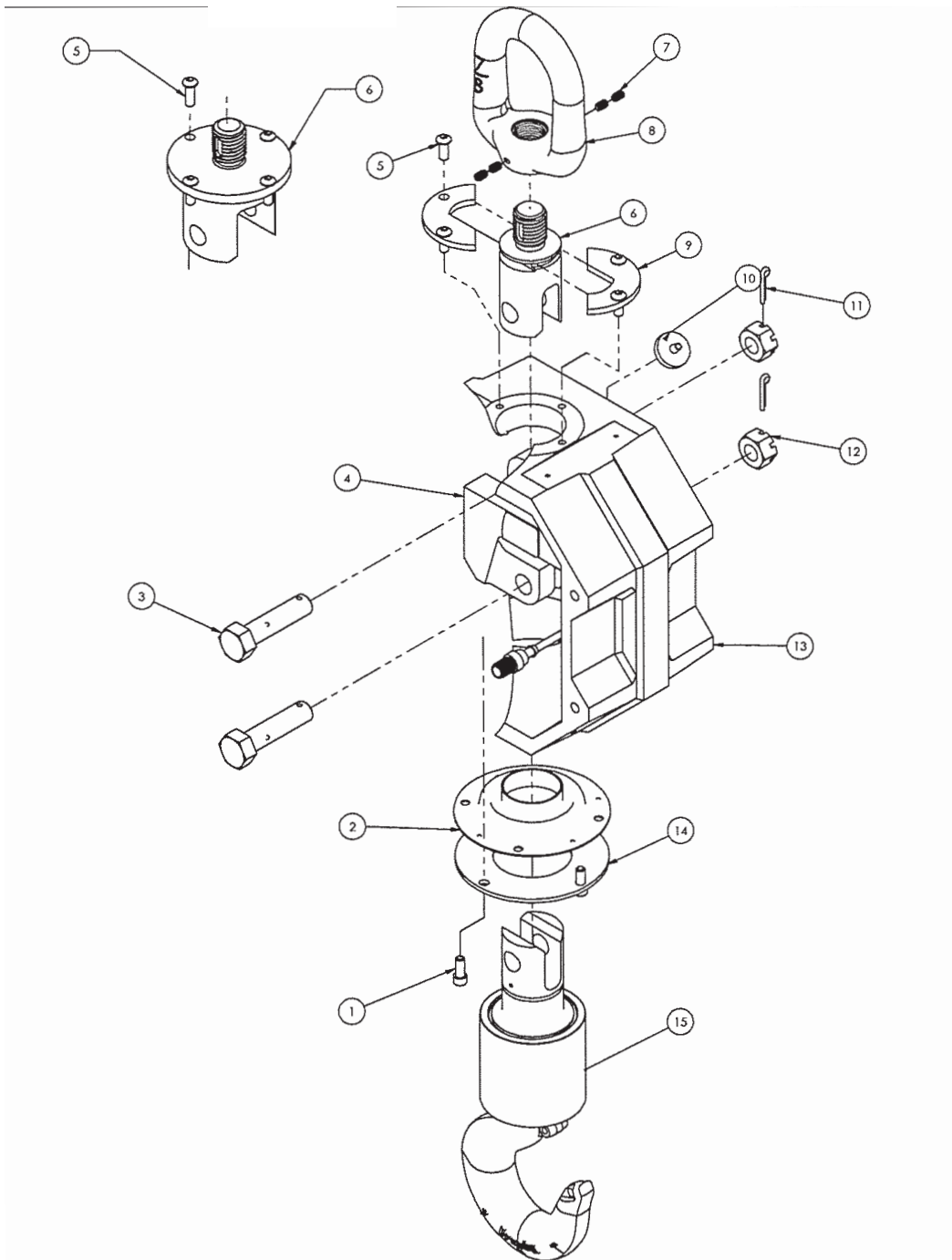
### 2.6.3    MSI-6360 Mid-Section Assembly



*Figure 2-7. MSI-6360 Mid-Section Assembly 500 lb to 10,000 lb*

| Item | Part No. | Description |
|------|----------|-------------|
| 1 | 145990 | Screw socket head 1/4-20 x 5/8 stainless steel |
| 2 | 149710 | Seal link lower (500lb - 2K) |
| 2 | 149165 | Seal link lower (5 - 10k) |
| 3 | 148457 | Bolt clevis hex head 5/8 x 1.75 (500lb - 2K) |
| 3 | 149217 | Bolt clevis hex head 5/8 x 1.75 (5 - 10K) |
| 4 | 138661 | Load cell assembly (500 lb) |
| 4 | 138662 | Load cell assembly (1 - 2K) |
| 4 | 138663 | Load cell assembly (5K) |
| 4 | 138664 | Load cell assembly (10K) |
| 5 | 72031 | Screw |
| 6 | 148271 | Upper link (500 lb -2K) |
| 6 | 149126 | Upper link (5 - 10K) |
| 7 | 128799 | Screw, set 1/4-20 x 3/8 |
| 8 | 139795 | Eye nut #7 (500 lb - 2K) |
| 8 | 148225 | Eye nut #7 (5 - 10K) |
| 9 | 148274 | Collar top half (500 lb - 2K) |
| 10 | 146322 | Filter millipore |
| 11 | 15238 | Cotter pin |
| 12 | 142832 | Nut hex slotted 5/8 - 11 |
| 13 | 150519 | Casting (500 lb - 2K) |
| 13 | 149175 | Casting (5 - 10K) |
| 14 | 148259 | Collar (500 lb - 2K) |
| 14 | 149168 | Collar (5 - 10K) |
| 15 | 135043 | Swivel hook assembly (500 lb - 2K) |
| 15 | 143236 | Latch, safety (500 lb - 2K) |
| 15 | 134523 | Swivel hook assembly (5 - 10K) |
| 15 | 143233 | Latch, safety (5 - 10K) |

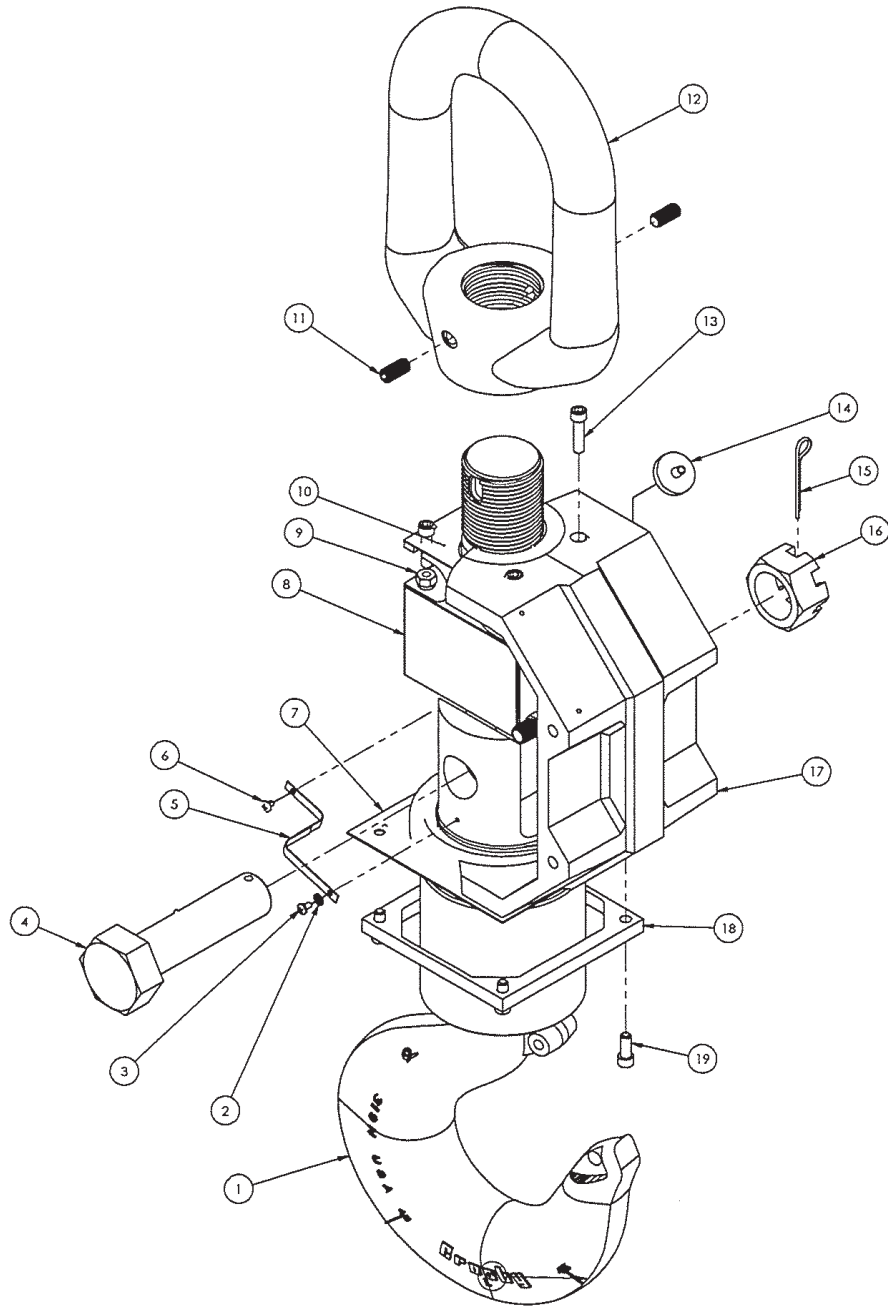*Table 2-4. MSI-6360 Mid-Section Assembly 500 lb to 10,000 lb Components*

*Figure 2-8. MSI-6360 Mid-Section Assembly 20,000 lb and 30,000 lb*

| Item | Part No. | Description |
|------|----------|-------------|
| 1 | 134938 | Swivel hook assembly (20K) |
| 1 | 134939 | Swivel hook assembly (30K) |
| 1 | 110661 | Latch assembly (20K) |
| 1 | 143235 | Latch assembly (30K) |
| 2 | 81280 | Washer, lock no 6 type A |
| 3 | 146601 | Screw pan head 6-32 x 1/4 Phillips |
| 4 | 148458 | Bolt clevis hex head 1.125 - 7 |
| 5 | 139843 | Ground strap cable |
| 6 | 146101 | Screw pan head 6-32 x 3/16 type |
| 7 | 149957 | Boot lower (20-70K) |
| 8 | 137763 | Load cell assembly (20/30K) |
| 9 | 146631 | Nut hex 1/4-20 nyloc stainless steel |
| 10 | 149976 | Gasket upper (20/30K) |
| 11 | 146081 | Screw set 3/8-24 x 3/4 |
| 12 | 148110 | Eye nut (20/30K) galvanized |
| 13 | 81405 | Screw, socket head 1/4-20 |
| 14 | 146322 | Filter millipore |
| 15 | 142186 | Cotter pin 3/16 x 2 stainless steel |
| 16 | 142833 | Nut hex slotted 1.125 - 7 |
| 17 | 150523 | Mid-section machined |
| 18 | 149958 | Collar bottom (20 - 50K) |
| 19 | 145990 | Screw socket head 1/4-20 x 5/8 stainless steel |

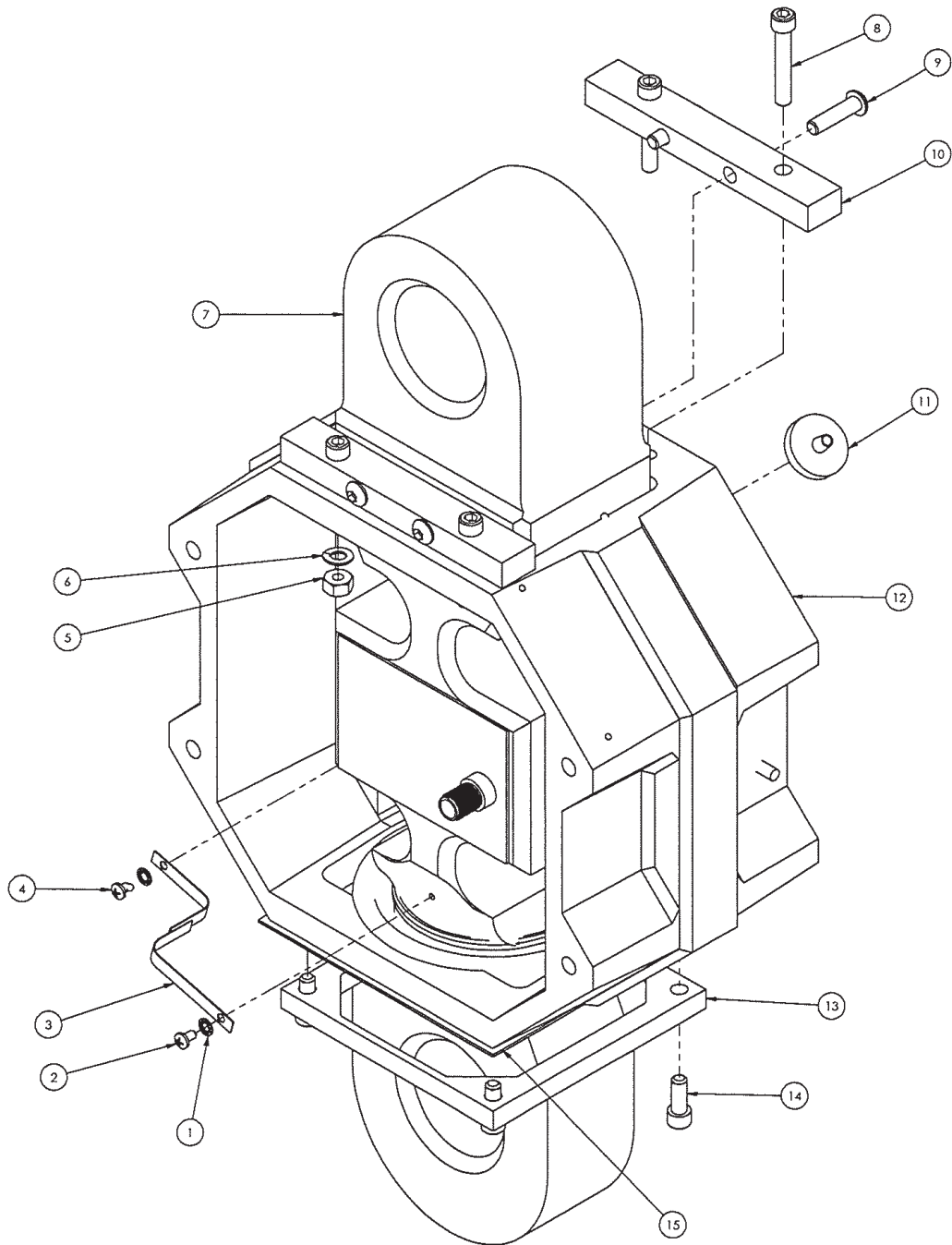*Table 2-5. MSI-6360 Mid-Section Assembly 20,000 lb and 30,000 lb Components*

*Figure 2-9. MSI-6360 Mid-Section Assembly 50,000 and 70,000 lb*

| Item | Part No. | Description |
|------|----------|-------------|
| 1 | 81280 | Washer, lock no 6 type A |
| 2 | 146601 | Screw pan head 6-32 x 1/4 Phillips |
| 3 | 139843 | Ground strap cable |
| 4 | 146101 | Screw pan head 6-32 x 3/16 type |
| 5 | 14642 | Nut, 1/4-20NC hex stainless steel |
| 6 | 15148 | Washer, lock 1/4 regular |
| 7 | 137764 | Load cell assembly 50/70K |
| 8 | 117599 | Screw, cap 1/4-20NC x 1-1/2 |
| 9 | 145982 | Screw button head 1/4-20 x 1 stainless steel |
| 10 | 148213 | Collar top 50/100K |
| 11 | 146322 | Filter millipore |
| 12 | 150525 | Mid-section machined |
| 13 | 149958 | Collar bottom 20-50K |
| 14 | 145990 | Screw slotted head 1/4-20 x 5/8 stainless steel |
| 15 | 149957 | Boot lower 20-70K |
|  | 135035 | 50K hook, swivel |
|  | 142179 | 50K latch |
|  | 135036 | 70K hook |
|  | 142180 | 70K latch |
|  | 151356 | 50K shackle 25 ton |
|  | 146335 | 70K shackle 40 ton |

*Table 2-6.  MSI-6360 Mid-Section Assembly 50,000 and 70,000 lb Components*
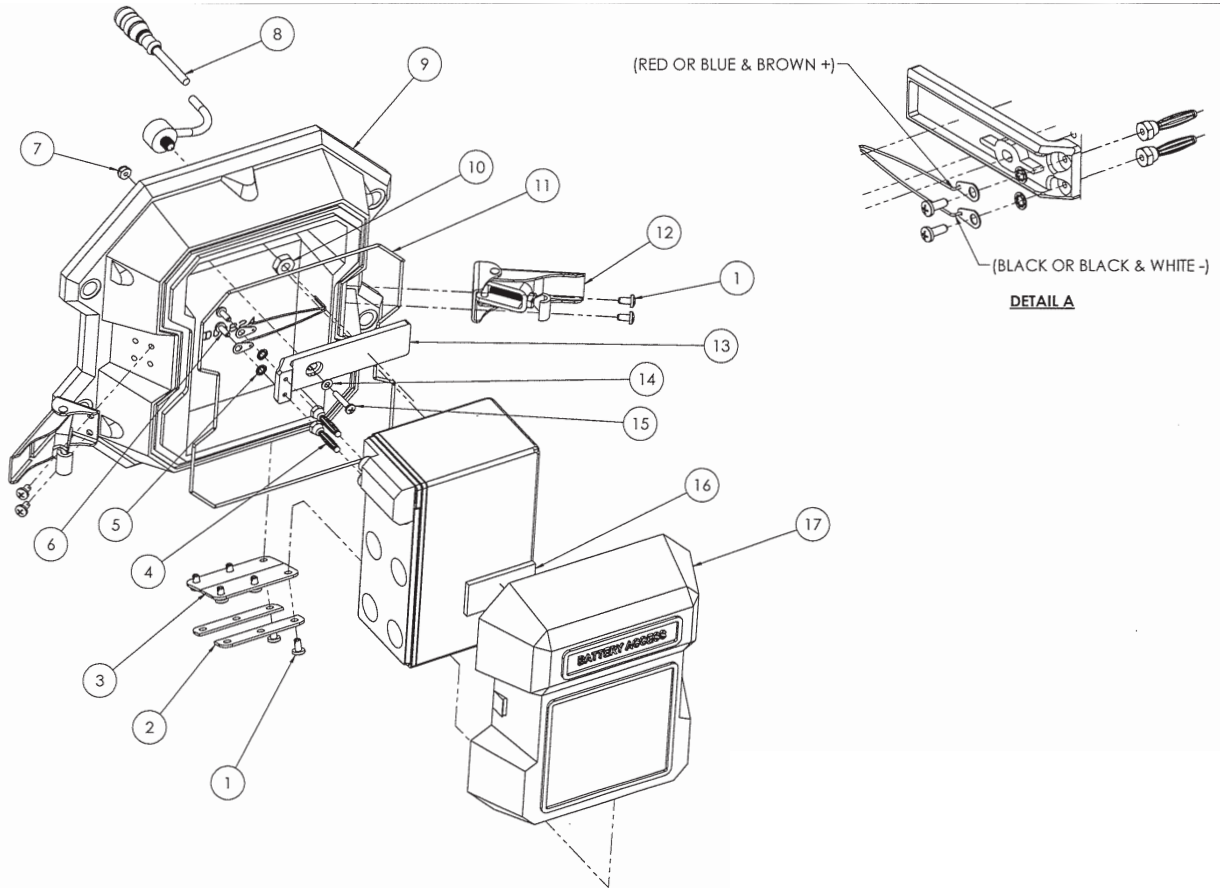
## 2.6.4  MSI-6360 Back Assembly



*Figure 2-10. MSI-6360 Back Assembly*

| Item | Part No. | Description | Qty. |
|---|---|---|---|
| 1 | 193557 | Casting, rear cover, 12V, machined | 1 |
| 2 | 149719 | Fastener battery door | 2 |
| 3 | 149718 | Plate aluminum battery | 4 |
| 4 | 213050 | Screw, button head 8-32 × 5/16 stainless steel (T15) torx drive | 16 |
| 5 | 147825 | Plug banana jack | 2 |
| 6 | 81280 | Washer, lock no 6 type A | 2 |
| 7 | 146603 | Screw, pan head 6-32 × 3/8 Phillips stainless steel | 2 |
| 8 | 146627 | Nut, hex 6-32 nyloc stainless steel | 1 |
| 9 | 214737 | Cable assembly power 12 in | 1 |
| 10 | 204844 | Casting rear 12V SLA machined | 1 |
| 11 | 145934 | Latch camloc | 2 |
| 12 | 149723 | O-ring assembly batter well casting | 1 |
| 13 | 146661 | Nut, hex 5/16-18 jam stainless stell | 1 |
| 14 | 169440 | Connector block 12V battery casting intrinsically safe | 1 |
| 15 | 55124 | Washer, flat #6 cres | 1 |
| 16 | 127036 | Screw, 6-32 × 3/4 Phillips pan head 18-8 stainless steel | 1 |
| 17 | 146640 | Pad poron 2.0 × 1.0 | 1 |

*Table 2-7.  MSI-6360 Back Assembly Components*

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# 3.0    ScaleCore Connect Installation

ScaleCore Connect is used to program and configure the MSI-6360 Trans-Weigh using ScaleCore software. It allows complete backup, copy and restore of a scale configuration including calibration. Install the ScaleCore Connect Software onto a computer for setting up multiple products.

**System Requirements**
Windows® Operating System
    Display: 800 x 600 or greater
    Built-in serial port or USB to serial port adapter
        FTDI chip set required (Tripp-Lite USB/Serial Adapter [PN 153603] recommended)
JAVA JRE 1.7 or Newer
    To download and install JAVA JRE: **https://java.com/en/download/manual.jsp**

## 3.1    Install Program

To install:

1.   Open the Rice Lake website and navigate to the **ScaleCore Connect** product page and scroll to the Software tab under Resources/Downloads.

2.   Download the ScaleCore Connect software to the computer.

3.   Extract the zip file to generate the ScaleCore Connect folder.

4.   Open the folder and double click on ***ScaleCoreConnect_XX-XX.exe***.

📝   *NOTE: Folder structure must be kept intact. Application will not work without the companion folder.*

5.   A security warning may display, press **Run** to continue.

6.   ScaleCore Connect will automatically connect to any connected ScaleCore device. If a device was not connected to the PC before launching the application, connect device and press   **Auto Connect**   to establish the connection for configuration/setup of the device.

📝   *NOTE: Make sure USB/serial drivers are installed and up-to-date If the scale does not appear.*
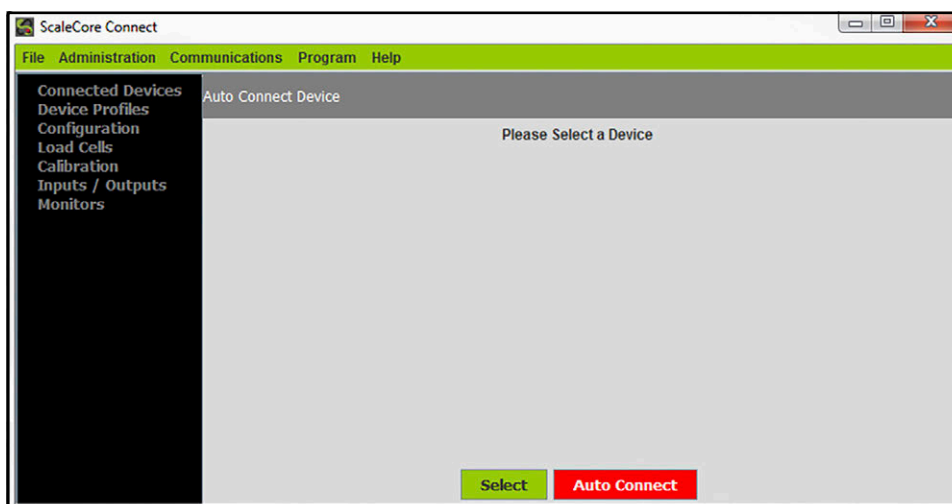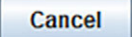


*Figure 3-1. ScaleCore Connect Main Display*

# 4.0    Configuration/Setup

This section is a guide for setting up the MSI-6360 by the ScaleCore Connect program.

Prior to making changes to a product profile it is recommended to save a backup. See Section 4.11.2 on page 43.

At anytime during set up, press  Cancel  to return to previous page without saving.

## 4.1    Connect a Device

ScaleCore Connect supports interfacing to the MSI-6360 from RS-232 connection. See Section 2.3.1 on page 13 for RS-232 connection information.

## 4.2    Connected Devices

Displays currently connected devices. Devices must be connected and powered on to be visible.



*Figure 4-1. Connected Devices*

1.  Press  Auto Connect . Connected devices display.

2.  Select the device to configure and press  Select .

## 4.3    Device Profiles

A device profile contains all settings of a device, such as load cell calibration, communication settings, setpoints, relay, print string, etc. See Section 4.11.2 on page 43 and Section 4.11.3 on page 43 for more information on device profiles.



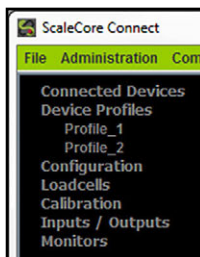*Figure 4-2. Device Profiles*

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## 4.4 Configuration

The configuration menu displays parameters related to the configuration of scale power and communication.

### 4.4.1 Auto Connect

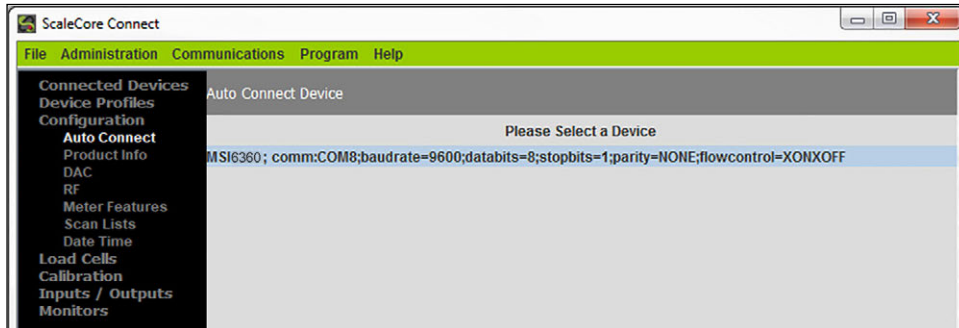Auto Connect triggers a new search for available devices.



*Figure 4-3. Configuration Display*

### 4.4.2 Product Info

Product info displays device identification information.

📝 **NOTE: Do not change these settings without consulting Rice Lake Weighing Systems or a local dealer.**
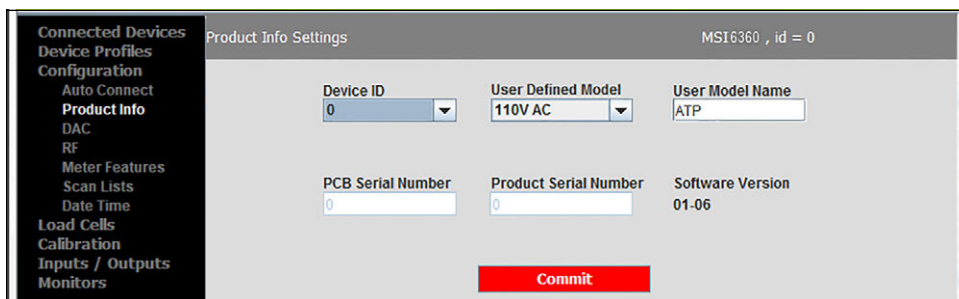


*Figure 4-4. Product Info Settings*

1. Select **Configuration**, then **Product Info**.
2. Make any necessary changes in the following parameters:

| Parameter | Description | |
|---|---|---|
| Device ID | Number given to the current product (selections: 1–255) | |
| User Defined Model | ATP<br>3 C Cells<br>6 D Cells<br>6V Battery<br>12V Battery<br>110V AC<br>CHI 107<br>CHI 234<br>AC Power<br>DC Power | Power source of current product |
| User Model Name | Enter a name for the product | |
| PCB Serial Number | Serial number for the PCB board, read only | |
| Product Serial Number | Serial number of displayed product, read only | |
| Software Version | Displays the version of software currently installed, read only | |

*Table 4-1.  Product Info Settings Parameters*

3. Press [ **Commit** ] to save. New settings will not take affect until power is cycled on the product.

### 4.4.3    RF Configuration

Radio Frequency (RF) configuration displays RF setup information.



*Figure 4-5. RF Configuration*

1.  Select **Configuration**, then **RF**.

2.  Make any necessary changes in the following parameters:

| Parameter | Description |
|-----------|-------------|
| Status | Select Enabled (default) or Disabled |
| Channel | Select a channel from 12–23 |
| Network ID | Enter a number from 0–65534 for an ID |
| Device Type | Select XBee or Other (for all other cards installed) |
| Power Level | Select a level from 0–4 |
| Always On | Select Enabled (default) or Disabled |

*Table 4-2.  RF Configuration Parameters*

**NOTE: Only set Always On to Enabled when using Rugged Remote. Having this parameter set to Enabled will drain the battery even when the scale if off. Disconnect the battery when not in use.**

3.  Press **Commit** to save. New settings will not take effect until power is cycled on the product.

**NOTE: Channel, Network ID, and Power Level are only used with the 802.15.4 radio option. If the device does not have a secondary 802.15.4 radio option installed, these settings will have no effect on the scale.**

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

**The optional second xBee radio can only be configured at the factory. It can not be configured through the front panel orScaleCore Connect**

**IMPORTANT: Changing the RF status will result in loss of connection to scale. Connection will need to be reconfigured using the front panel or the serial port.**

## 4.5    Load Cells

The Load Cells menu displays parameters related to the load cell configuration.

### 4.5.1    General

The General menu displays parameters for each load cell associated with the connected device.
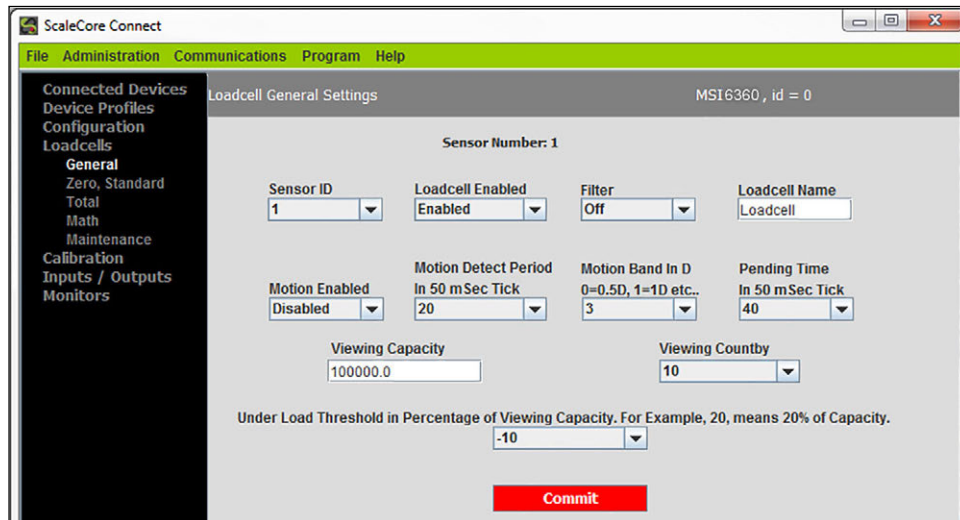


*Figure 4-6. Load Cell General Settings*

1.  Select **Load Cells**, then **General**.

2.  Make any necessary changes in the following parameters:

| Parameter | Description |
|---|---|
| Load Cell Number | Select a load cell number 1–5 |
| Load Cell Enabled | Select Enabled (default) or Disabled |
| Filter | Set filtering to Off, Low, Medium or High |
| Load Cell Name | Enter a name to identify the load cell |
| Motion Enabled | Select Enabled or Disabled (default) |
| Motion Detect Period in 50 mSec Tick | Select a number from 1-255 |
| Motion Band in D, 0=0.5D, 1=1D etc. | Select a number from 1-255 |
| Pending Time in 50 mSec Tick | Select a number from 1-255 |
| Viewing Capacity | Enter Capacity |
| Viewing Countby | Select 0.0001-5000 |
| Under Load Threshold | Select a number from -100 to 90 |

*Table 4-3.  Load Cell General Settings Parameters*

3.  Press [ **Commit** ] to save.

### 4.5.2 Zero, Standard

The Zero, Standard display defines the regulatory standard of a device. Additionally, all of the parameters for zeroing the scale can be adjusted in this display. Parameters vary by selected standard mode.



*Figure 4-7. Load Cell Zero Settings*

1. Select **Load Cells**, then **Zero, Standard**.

2. Enter the following parameters for the current product::

| Parameter | Description |
|---|---|
| Standard Mode | Select Industry, NTEP, OIML or One Unit |
| AZM | Select Disabled or Enabled |
| Motion Detection | Select Disabled or Enabled |
| Zero On Power Up | Select Disabled or Enabled |
| Load Cell Number | Select the load cell number from 1-4 |
| AZM Range in D | Select a number from the AZM range (0-255) |
| AZM Period in 50 milli Sec | Select a number from the AZM period (20-255) |
| Zero High Band | Select the zero high band number from 1-100 (in percentage of capacity) |
| Zero Low Band | Select the zero low band number from 1-20 (in percentage of capacity) |
| Power Up Zero Hi Band | Select the power up zero hi band number from 1-25 (in percentage of capacity) |
| Power Up Zero Low Band | Select the power up zero low band number from 1-20 (in percentage of capacity) |

*Table 4-4. Load Cell General Settings Parameters*

3. Press **Commit** to save.

### 4.5.3    Total

The Total display defines Total mode of a load cell. Total mode allows for consecutive weighments to be summed in a combined total. All of the parameters that control the timing and thresholds of the chosen Total mode can be adjusted in this display.
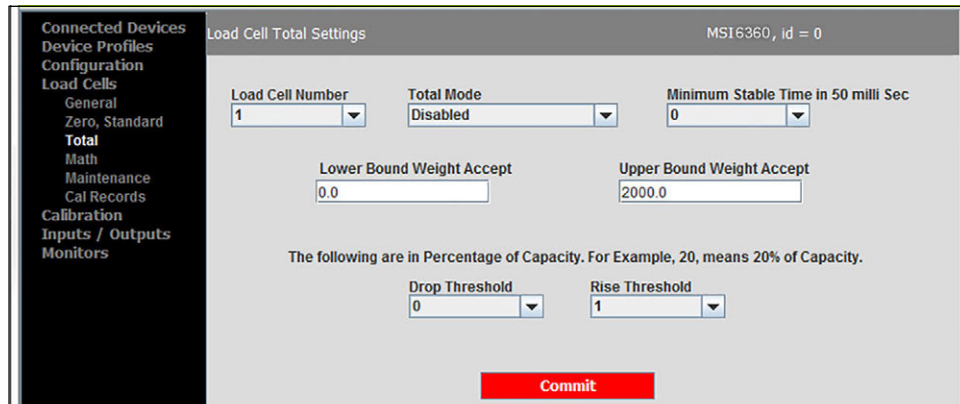


*Figure 4-8. Load Cell Total Settings*

1.  Select **Load Cells**, then **Total**.

2.  Make any necessary changes in the following parameters:

| Parameter | Description | |
|---|---|---|
| Load Cell Number | Select the load cell number from 1–5 | |
| Total Mode | Disabled<br>Auto Load<br>Auto Normal<br>Auto Peak<br>Load Drop<br>On Accept<br>On Command | Select the type of total mode for the connected product |
| Minimum Stable Time | Select the minimum stable time from 0–255 (in 50 ms) | |
| Lower Bound Weight Accept | Enter the lower bound weight | |
| Upper Bound Weight Accept | Enter the upper bound weight | |
| Drop Threshold | Select the drop threshold number from 0–100 (in percentage of capacity) | |
| Rise Threshold | Select the rise threshold number from 0–100 (in percentage of capacity) | |

*Table 4-5.  Load Cell Total Settings Parameters*

3.  Press  **Commit**  to save. New settings will not take affect until power is cycled on the product.

### 4.5.4 Math

The Math Channel Settings display configures multiple load cell sensors to combine into one output measurement. Math Channel settings transfer to the connected device. Once the device is disconnected from ScaleCore Connect, the device's math channel will use the Math Expression configuration to sum up to 3 sensors as the output measurement. This is useful if a load is being lifted from more than one point.
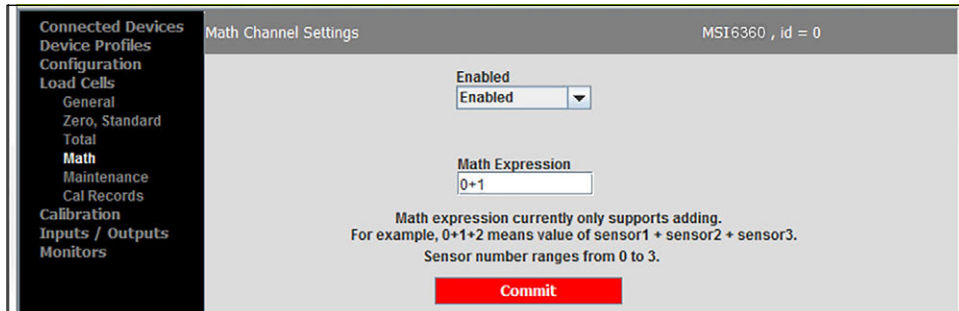


*Figure 4-9. Math Channel Settings*

1.  Select **Load Cells**, then **Math**.
2.  Make any necessary changes in the following parameters:

| Parameter | Description |
|---|---|
| Enabled | Select Enabled or Disabled |
| Math Expression | Enter math expression |

*Table 4-6. Math Channel Settings Parameters*

3.  Press **Commit** to save.

### 4.5.5 Maintenance

See for the advanced setup of the maintenance settings.

> NOTE: *Do not change these settings without consulting Rice Lake Weighing Systems or a local dealer.*
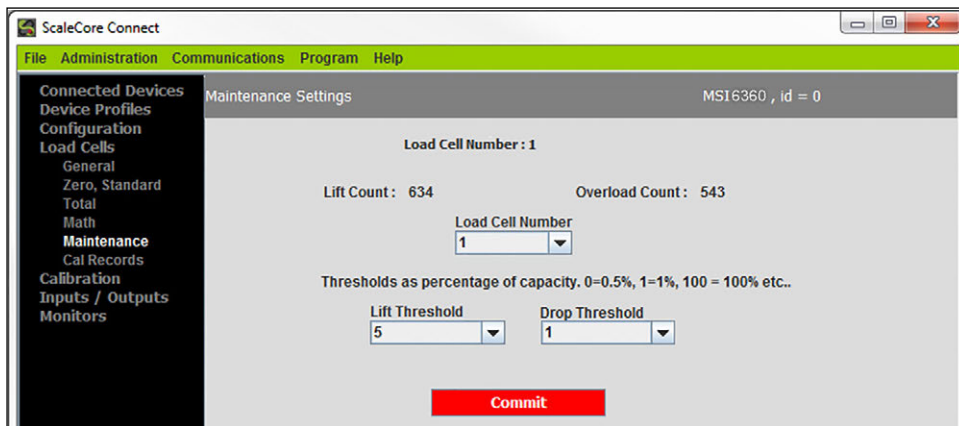


*Figure 4-10. Maintenance Settings*

1.  Select **Load Cells**, then **Maintenance**.

2. Make any necessary changes in the following parameters:

| Parameter | Description |
|---|---|
| Load Cell Number | Load cell number (read only) |
| Lift Count | Number of times the load cell has exceeded the Lift Threshold (read only) |
| Overload Count | Number of times the load cell has exceeded capacity (read only) |
| Load Cell Numbers | Select the sensor ID from 1-4 |
| Lift Threshold | Select the lift threshold number from 0–100 (in percentage of capacity, 0=0.5%, 1=1%, 100=100%) |
| Drop Threshold | Select the drop threshold number from 0–100 (in percentage of capacity, 0=0.5%, 1=1%, 100=100%) |

*Table 4-7.  Maintenance Settings Parameters*

3. Press [ Commit ] to save.

## 4.5.6   Calibration Records

The Calibration Records display maintains a record of the calibration of each load cell for maintenance and regulatory purposes.

1. Select **Load Cells**, then **Cal Records**.

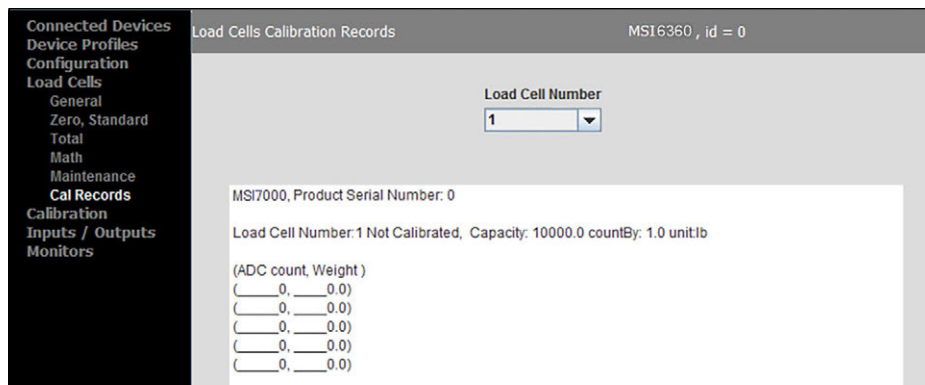2. Select **Load Cell Number** and the recorded calibration settings for selected load cell displays.



*Figure 4-11. Calibration Records Settings*

## 4.6    Inputs / Outputs

The Inputs / Outputs menu displays parameters related to input and output function of the scale.

### 4.6.1    Setpoints

Setpoints provide a trip point for load values.



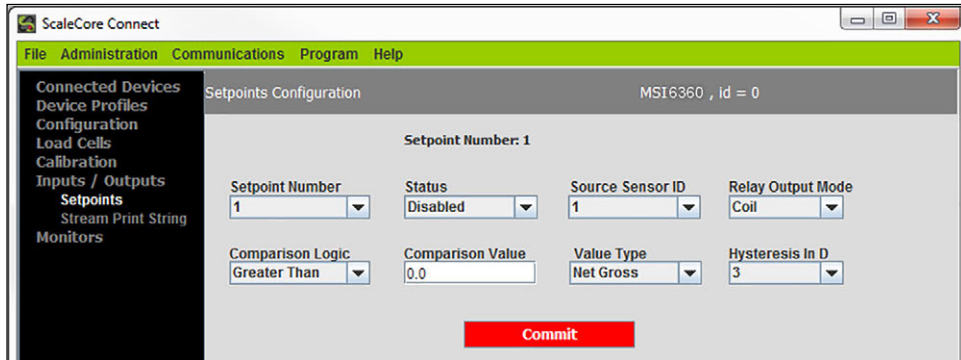*Figure 4-12. Setpoint Configuration*

1.    Select **Inputs / Outputs**, then **Setpoints**.

2.    Make any necessary changes in the following parameters:

| Parameter | Description | |
|---|---|---|
| Setpoint Number | Select the setpoint number from 1–3 | |
| Status | Select Disabled or Enabled | |
| Source Sensor ID | Select the source sensor ID number from 1–5 | |
| Relay Output Mode | Select Coil or Latch | |
| Comparison Logic | Select Undefined, Greater Than or Less Than | |
| Comparison Value | Enter the comparison value | |
| Value Type | Net Gross<br>Gross<br>Total<br>Total Count<br>Lift Count | Select the value type parameter |
| Hysteresis in D | Select the hysteresis in D number from 0–99 | |

*Table 4-8.   Setpoints Configuration Parameters*

3.    Press [ Commit ] to save.

### 4.6.2 Stream Print String

**Listeners**

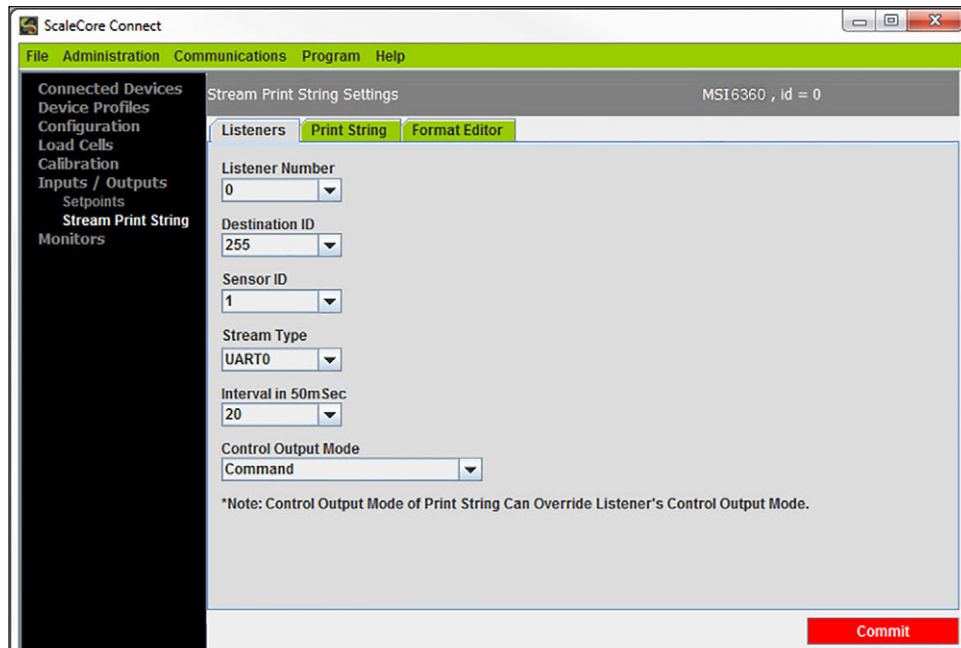The Listeners feature controls the machine to machine communications interfaces.


*Figure 4-13. Listener Settings*

1. Select **Inputs / Outputs**, then **Stream Print String**.

2. Select the **Listeners** tab.

3. Make any necessary changes in the following parameters:

| Parameter | Description |
|---|---|
| Listener Number | Select stream listener number from 0–2 |
| Destination ID | Select the ID assigned to the stream listener from 0–255; 255 indicates broadcast ID, it is for every device that attached |
| Sensor ID | Select the sensor the listener will observe from 1–5 |
| Stream Type | Select the type of this stream listener |
| Interval (50 ms) | Select interval value from 0–255 Example: 20 means 20x50 ms = 1 second. |
| Control Output Mode | Select the mode for the listener |

*Table 4-9. Listener Parameters*

4. Press **Commit** to save.

## Print String

The edit print string, allows the mode, interval and composite for a listener to be configured. The mode can be configured to print on command, on stable load, continuous, or it can be disabled. The print composite allows the combination of the configured print formatters to produce a great deal of information in a single print.
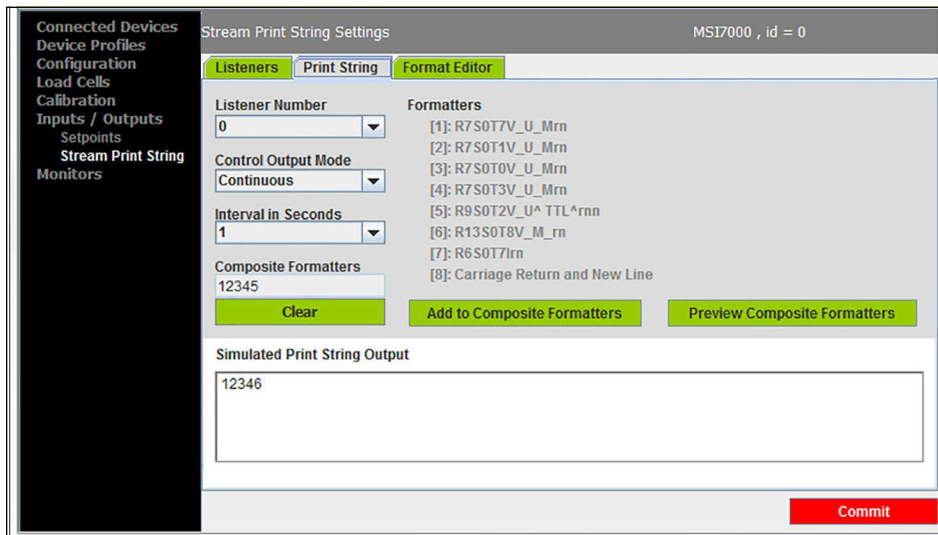


*Figure 4-14. Print String Settings*

1. Select **Inputs / Outputs**, then **Stream Print String**.
2. Select the **Print String** tab.
3. Make any necessary changes in the following parameters:

| Parameter | Description |
|---|---|
| Listener Number | Select stream listener number from 0–2 |
| Control Output Mode | Select the output mode for the print string; Disabled, Command, Stable Load, Continuous |
| Interval in Seconds | Select the interval period on continuous output from 0–255, 0 (fastest) up to 255 seconds |
| Composite Formatters | Add formatters from list; preview as needed; Clear to reset selected formatters |

*Table 4-10.  Print String Parameters*

4. Press   **Commit**   to save.

## Format Editor

The format editor function allows customization of the formatted print information that a ScaleCore device can produce. Custom print formatters can be generated with the help of the custom interface within the format editor.
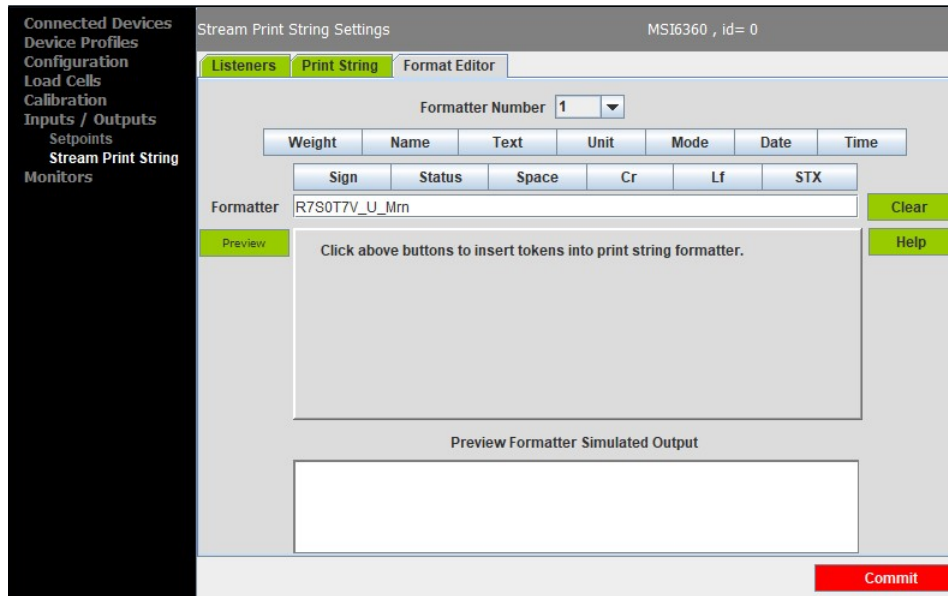


*Figure 4-15. Format Editor*

Use the buttons to create the string or type it into the formatter box. The maximum length for this print string is 18 characters.

*NOTE:* All characters are case sensitive.

| Character | Definition | Explanation |
|---|---|---|
| R## | Right justify length of next field | R5 means next item maximum width is 5 characters with padding leading spaces if needed; R0 means variable width without justify; It is only valid for one next field; ## maximum value is 12. |
| L## | Left justify length of next field | L5 means next item maximum width is 5 characters with padding trailing spaces if needed; L0 means variable width without justify. It is only valid for one next field. ## maximum value is 12. |
| S## | Defines sensor for fields V, I, M, N and U | S05 means that fields V, I, M, N and U will output values from sensor 05; Once S## is specified, following V, I, M, N and U fields are referred to current S## until new S## is specified; ## maximum value is 15. *NOTE: If sensor is not specified, default sensor is Sensor#0* |
| T# | Defines data type | # represents the type of data that trailing characters will output: 0==GROSS, 1==NET, 2==TOTAL, 3==TARE, 4==ZERO, 5==PEAK, 6==ADC COUNT, 7==CURRENT MODE. 8 == Total count Example, T1 means following value field is for NET weight value; *NOTE: If data type is not specified, default type is GROSS* |
| V | Outputs real value | Output value is based on leading print string data type T# from sensor ID field S##; Output precision is based on configured count-by d; See Table 4-11 on page 37 |
| I | Outputs integer value | |
| A | Outputs absolute value | |
| M | 5-character string of specified data type | Output character field representing data type T#; character field is fixed at five characters with trailing padding spaces if needed; Example, T1 is NET mode; M field will print NET with two trailing blank characters T6 is ADC COUNT; M field will print ADC C with no trailing blank characters |
| m | First character of specified data type | Output character field representing data type T#; character field is fixed at one character; Example, T1 is NET mode; m field will print N T6 is ADC COUNT; m field will print A |
| N | Name of sensor | Output name of sensor S##; Name is defined by *NOTE: Field can be controlled by R## and L##* |

*Table 4-11. Parameter Print Characters*

| Character | Definition | Explanation |
|-----------|------------|-------------|
| U | 2-character string of current unit of specified sensor | Unit output is always two characters; kg=kilogram, lb=Pound, T =Metric Ton, TN=English Ton |
| u | First character of current unit of specified sensor | Unit output is always one character |
| P | Polarity of specified sensor | Output '-' if negative; Output blank space if positive |
| t | Status of specified sensor | Output M= in-motion, Z=COZ, O=overload or underload; Blank space outputs if none |

*Table 4-11.  Parameter Print Characters (Continued)*

| Character | Formatting |
|-----------|------------|
| _ | Space character |
| r | Carriage return |
| n | New line feed |
| ^ | String quote (^ABC D^ outputs "ABC D") |
| s | Start of text (STX) |

*Table 4-12.  Formatting Print Characters*

## Examples:

*String: R7S0T0V_U_Mrn*

    *R7 - Right justify next output with 7 characters width*

    *S0 - All values extracted from Sensor 0*

    *T0 - All data extracted as GROSS mode*

    *V - Output data value precision based on <u>count-by</u>*

    *_ - Space*

    *U - Output 2-character string unit*

    *_ - Space*

    *M - Output 5-character data type string*

    *r - carriage return*

    *n - line feed*

*Output:* **12345 lb GROSS** <*<u>cr</u> LF*>

*String: S0T0MR7V_Urn*

*Output:* **GROSS  12345 lb** <*<u>cr</u> LF*>

*String: S0R4NT0R7V_U_Mrn*

    *Sensor name is "WestSide." Print string only outputs "West" because R4 limits the N output to 4 characters.*

*Output:* **West  12345 lb GROSS** <*cr LF*>

*String: ^Crane:1 ^S0T0R7V_U_Mrn*

    *1st field is a string "Crane:1 ".*

*Output:* **"Crane:1" 12345 lb GROSS** <*cr LF*>

*Standard Rice Lake Serial Scale String: sPR7S0T7Aumtrn*

## 4.7    Monitors

Monitor mode displays a terminal monitor view or a meter monitor view.



*Figure 4-16. Monitors Menu*

### Terminal

Terminal monitor view displays a blank screen that returns print string data that is useful when modifying the Stream Print String settings.

📝    *NOTE: Terminal monitor should only be used for troubleshooting by qualified Rice Lake Weighing Systems technicians.*

### Meter

Meter monitor view displays a virtual indicator weigh mode for the connected scale.
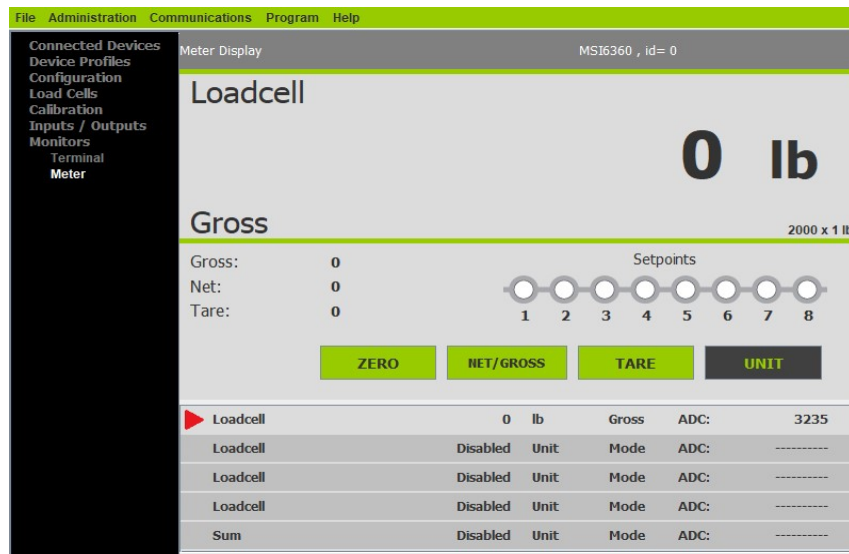


*Figure 4-17. Meter Monitor View*

## 4.8    File Menu

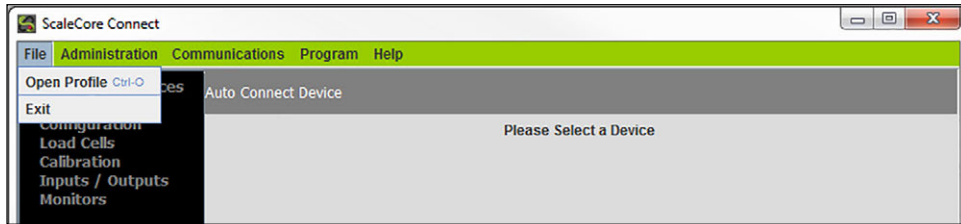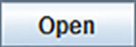The *File Menu* is used to open an existing profile or exit the program.



*Figure 4-18. File Menu Selections*

### 4.8.1    Open Profile

Profiles can be exported and saved, then imported into a different product. To open a previously saved profile:

1. Select **File**, then **Open Profile**.

2. Navigate to where the profile is stored.

3. Select the file and press [ **Open** ]. A valid profile file then displays on the left panel, under Device Profile .

4. Select the intended profile from the left panel. Application displays all information as if it was that device.

> NOTE: The profiles that show up grayed out are read only.

To clone the open profile see .

### 4.8.2    Exit

To close ScaleCore Connect application.

## 4.9    Administration Menu

Administration allows the setup of User Privileges. Selections are Normal User Mode and Administrator Mode. The current password must be available to complete this setup.
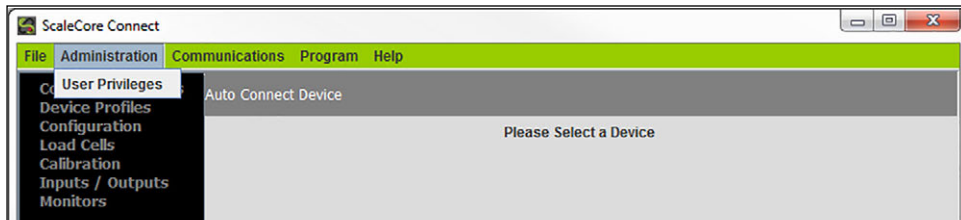


*Figure 4-19. Administration Menu Selection*

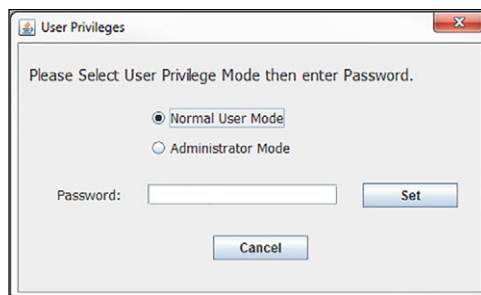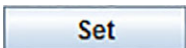1. Select **Administration**, then **User Privileges**. User Privileges window displays.



*Figure 4-20. User Privileges*

2. Select either Normal User Mode or Administrator Mode.

3. Enter the password and press [ **Set** ].

## 4.10 Communications Menu

Communications allows the selection and configuration of the stream ports.
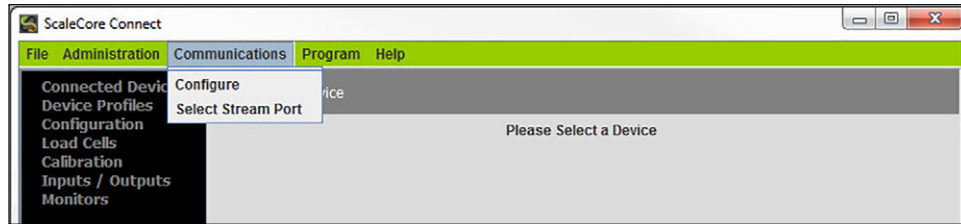


*Figure 4-21. Communications Menu Selections*

### 4.10.1 Select Stream Port

To select the stream port:

1. Select **Communications**, then **Select Stream Port**.

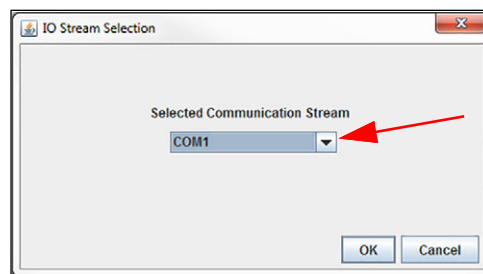2. Select the port to be used from the drop down.



*Figure 4-22. Select Stream Port*

3. Press OK to save and return to main page.

### 4.10.2 Configure Stream Port

To configure communications stream ports:

1. Select **Communications**, then **Configure**.

2. Select the port to be configured and press **Configure Stream**.
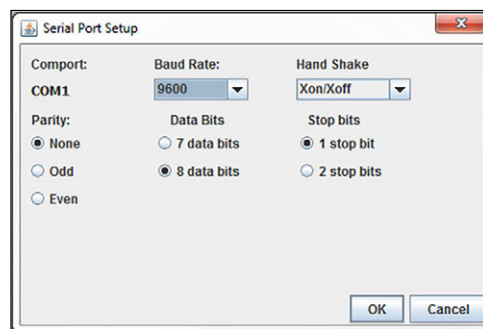


*Figure 4-23. Communication Setup*

3. Set the option:

   - **Baud Rate** – Rate at which information is transferred through the port

     Selections: 9600 (default), 19200, 38200, 57600, 115200

   - **Hand Shake** – Signals transmitted back and forth over a communications network in order to establish a valid connection between two stations.

     *Example: A hardware handshake uses dedicated wires like request-to-send (RTS) and clear-to-send (CTS) lines in an RS-232 serial transmission*

     Selections: None, RTS/CTS, XON/XOFF (default)

- **Parity** – error detection technique that tests the integrity of digital data in the computer
  - Selections: None (default), ODD, EVEN
- **Data Bits** – number of bits used to represent one character of data
  - Selections: 7 data bits, 8 data bits (default)
- **Stop Bits** – indicates end of a character or of the whole transmission
  - Selections: 1 stop bit (default), 2 stop bits

4. Press [ OK ] to save and return to Communication Setup.

5. Press [ OK ] to return to main page.

## 4.11  Program Menu

Program is used to program the application code, acquire a profile from a connected device or clone a profile from another connected product.
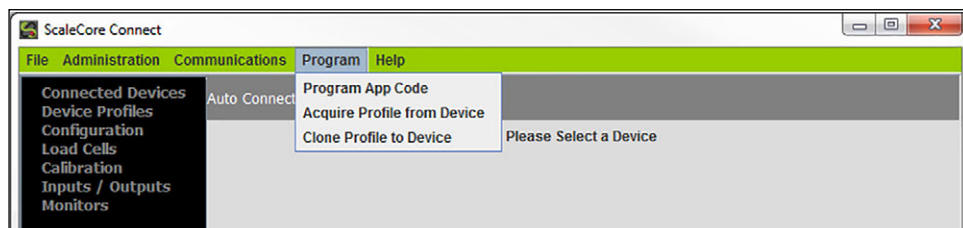

*Figure 4-24. Program Menu*

### 4.11.1  Program App Code

Program App Code is used to update the ScaleCore firmware on a connected device.

> **IMPORTANT:** *Program App Code should only be accessed by a trained dealer or under the direction of the Rice Lake Weighing Systems Customer Service.*
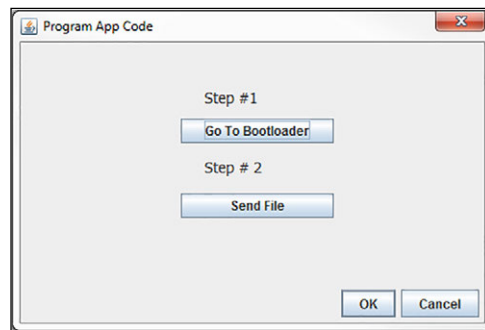

*Figure 4-25. Program App Code*

1. Select **Program App Code** from the **Program** drop down menu.

2. Press [ Go To Bootloader ], application switches to the terminal mode screen and displays the bootloader menu.

   *\* If the terminal mode screen displays strange characters, change the baud rate to 38400. See Configure Stream Port on page 41 to change the baud rate. Once the baud rate has been changed, make sure cursor is in the terminal screen and press the "R" key to refresh the terminal screen. The bootloader menu will display.*

   *\* If the unit shuts off after pressing the Go To Bootloader button, press the power key to restart the unit and the bootloader menu will display on the terminal screen.*

3. Press [ Send File ], a file dialog box pops-up.

4. Select an app code file from the file dialog box, press [ Open ], app code file is sent to the target device.

### 4.11.2 Acquire Profile from Device

Acquire profile from devices enables the user to save a configuration profile to the PC so that it can be cloned to other devices.

*IMPORTANT: Acquire Profile from Device should only be performed by a trained dealer or under the direction of the Rice Lake Weighing Systems Customer Service. This action could potentially remove all configuration, calibration and functionality if performed incorrectly*

*NOTE: Acquire Profile from Device is not 100% reliable if ScaleCore Connect is displaying the Meter Monitor. Ensure that ScaleCore Connect displays any configuration screen other than the Meter Monitor. (See Section 4.7 on page 39)*
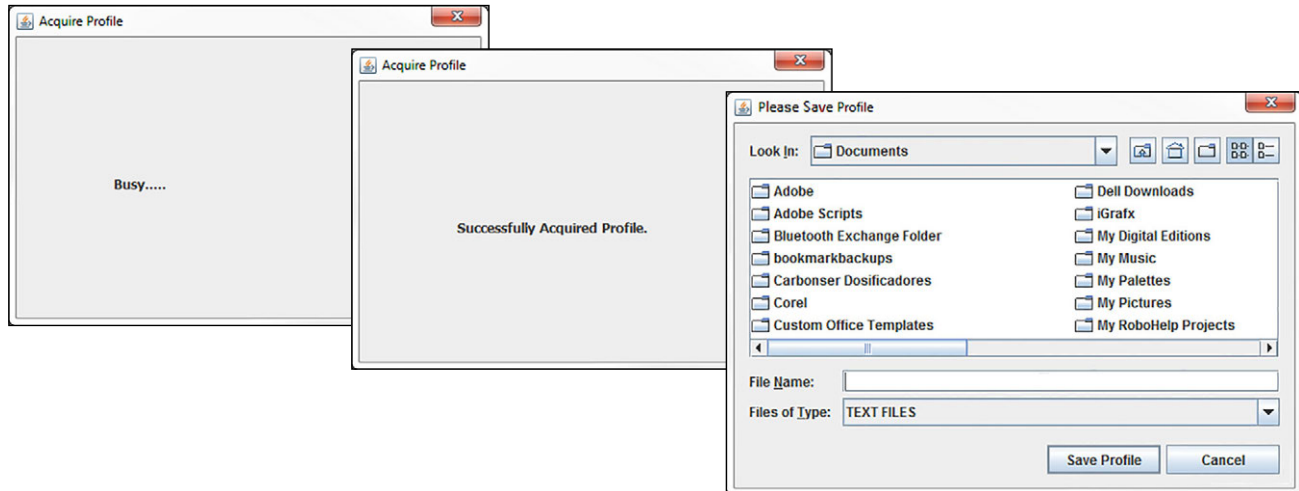


*Figure 4-26. Acquire Profile*

1. Select **Acquire Profile from Device** from the **Program** drop down menu.

2. When prompted save the file to desired location.

### 4.11.3 Clone Profile to Device

Clone profile to device enables the user to duplicate a saved configuration to multiple devices so that all of the devices share the same configuration without the need to set each parameter individually.

*IMPORTANT: Clone Profile to Device should only be performed by a trained dealer or under the direction of the Rice Lake Weighing Systems Customer Service. This action could potentially remove all configuration, calibration and functionality if performed incorrectly*

*NOTE: Clone Profile to Device is not 100% reliable if ScaleCore Connect is in the Meter Monitor display. Ensure that ScaleCore Connect displays Terminal Monitor or another configuration screen. (See Section 4.7 on page 39)*
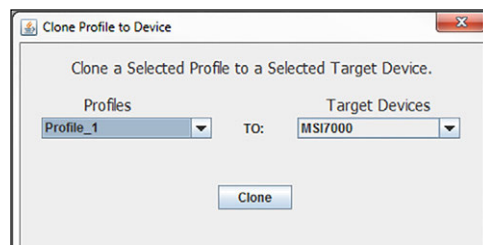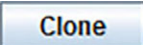


*Figure 4-27. Clone Profile*

1. Select **Clone Profile to Device** from the **Program** drop down menu.

2. Select the Profiles to clone to the Target Devices.

3. Press **Clone**.

4. Once profile is successfully cloned to the target device, the target device is configured based on the cloned profile info.

# 5.0 Calibration

The MSI-6360 must be calibrated remotely. Most commonly it is calibrated using a connected remote display. Reference the technical manual for the connected model for calibration instructions. The MSI-6360 can also be calibrated with ScaleCore connect. This section includes instructions for ScaleCore Connect calibration instructions.

The MSI-6360 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-6360 supports Multi-Point calibration with up to four span points plus zero.

When adequate test weights are not available, the MSI-6360 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-6360 can be calibrated without weights.

## 5.1 Calibration Switch Access

Use the following steps to access the calibration switch on the MSI-6360 if calibrating the unit using either the standard calibration or the C-Cal calibration.

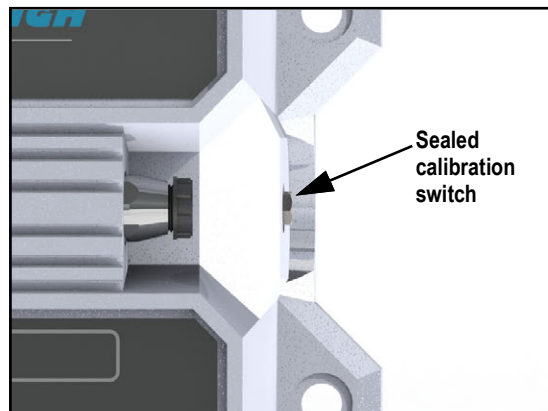1. Remove the hex seal screw from the MSI-6360.



*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 Calibration

The available methods of calibration are:

- **Full Cal Load Cell** – enter scale unit, capacity and countby
- **Re-Cal Load Cell** – uses current scale unit, capacity and countby
- **Full C-Cal Load Cell** – enter scale unit, capacity and countby; allows a calibration using a Constant Calibration (C-Cal) number without the requirement of test weights
- **Re-C-Cal Load Cell** – use current scale unit, capacity and countby; allows a calibration using a C-Cal number without the requirement of test weights
- **Multi Load Cell** – use when calibrating multiple load cells, perform a Full Calibration on each load cell to be calibrated

*NOTE: Refer to the connected remote display Technical Manual for remote display calibration instructions.*

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### 5.2.1 Full Calibration

1. Select **Calibration**, then **Full Cal Load Cell**.
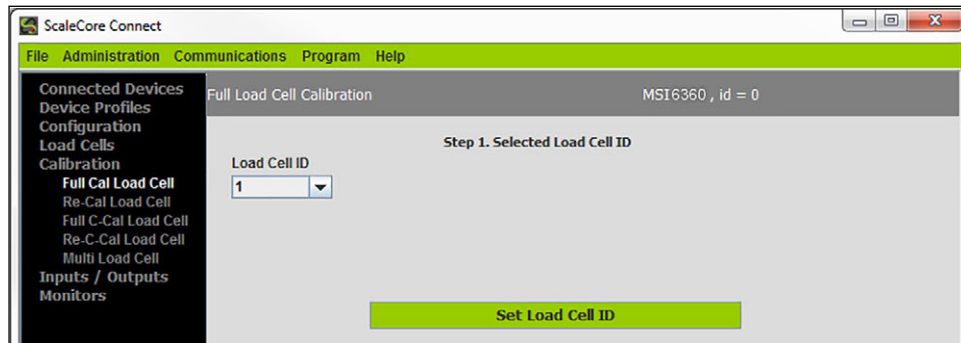


*Figure 5-2. Select Load Cell ID*

2. Select the **Load Cell ID** number from 1-4.

3. Press **Set Load Cell ID** .

4. Set the **Unit** and **Capacity** parameters.

5. Press **Set Unit And Capacity** .

📝 **NOTE: Press Cancel to end current calibration and restore the previous calibration.**

6. Select the desired **Countby** parameter, then press **Set Selected Countby** .

7. Ensure there is no weight on the load cell, then press **Unload Test Weight** .

8. Enter the test weight value, then press **Set Test Weight # X** .

9. Press **Finish** . The constant cal number is displayed, document the number for use later if needed.

10. Repeat steps above for each load cell to be calibrated.

### 5.2.2 Re-Calibration

1. Select **Calibration**, then **Re-Cal Load Cell**.

2. Select the Load Cell ID number from 1-4.

3. Press **Set Load Cell ID** .

4. Ensure there is no weight on the load cell, then press **Unload Test Weight** .

5. Enter the test weight value, then press **Set Test Weight # X** .

6. Press **Finish** . The constant calibration number is displayed, document the number for use later if needed.

7. Repeat steps above for each load cell to be re-calibrated.

### 5.2.3 Full Constant Calibration

1. Select **Calibration**, then **Full C-Cal Load Cell**.

2. Press **Set Load Cell ID** .

3. Set the **Unit** and **Capacity** parameters.

4. Press **Set Unit And Capacity** .

5. Select the desired **Countby** parameter, then press **Set Selected Countby** .

6. Ensure there is no weight on the load cell, then press **Unload Test Weight** .

7. Enter the constant calibration number, then press **Set Constant Cal #** .

### 5.2.4 Constant Re-Calibration

1. Select **Calibration**, then **Re-C-Cal Load Cell**.

2. Press **Set Load Cell ID** .

3. Ensure there is no weight on the load cell, then press **Unload Test Weight** .

4. Enter the constant calibration number, then press **Set Constant Cal #** .

# 6.0 Troubleshooting and Maintenance

## 6.1 Troubleshooting

| Problem | Possible Cause | Solution |
|---|---|---|
| The status LED does not light when the **POWER** button is toggled | 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 Status LED 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 remote 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 remote 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 remote 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 remote 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 remote 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 remote display toggles between "Error" and "A2DLo" | A/D is saturated negative | Check the load cell and load cell wiring |
| The remote 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 |
| Remote display shows "NO RF" | Scale is not in range, incorrect radio configuration | Move remote display closer to scale |
| | Interference or blocked signal | Ensure line-of-sight between remote display and scale |
| | Incorrect radio configuration | Check radio configuration; See Section 4.4.3 on page 28 |
| RF Remote does not work | Units are not paired | See Section 4.4.3 on page 28 |
| 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 |
| Status LED is blinking | The battery is low | Recharge the battery |

*Table 6-1. Troubleshooting*

| Problem | Possible Cause | Solution |
|---|---|---|
| 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-6360 to zero, tare, or total due to stability issues |
| Remote display 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 6-1.  Troubleshooting (Continued)*

## 6.2    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.

### 6.2.1    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

### 6.2.2   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

### 6.2.3   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)

### 6.2.4   FHSS (Frequency Hopper Spread Spectrum)
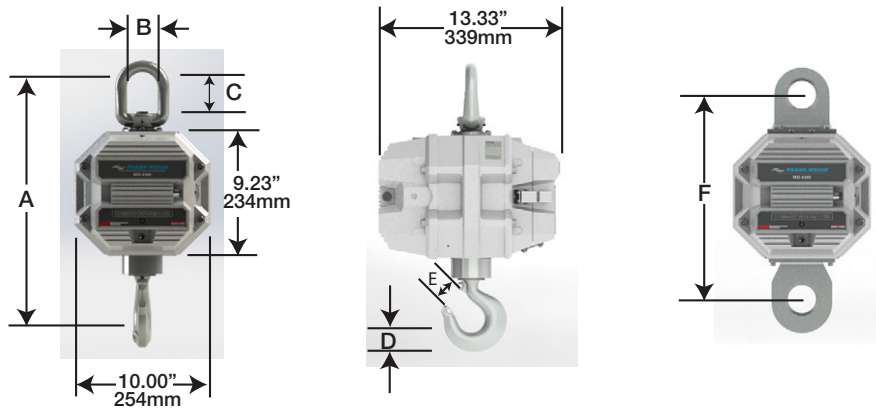
FCC Statement

Contains FCC ID: HSW-DNT24

International Certifications

Canada: Radio Certificate Number: IC 4492A-DNT24

ETSI Certified

## 6.3    MSI-6360 Trans-Weigh Dimensions



*Figure 6-1. MSI-6360 Product Dimensions*

| Capacity | Resolution** | A* | B* | C* | D* | E* | F | Hook | Eye Nut or Shackle | Safety Factor | Shipping Wt |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 500 lb<br>250 kg | 0.2 lb<br>0.1 kg | 18.2 in<br>463 mm | 2.25 in<br>57.1 mm | 3.06 in<br>77.7 mm | 1.44 in<br>37.0 mm | 1.41 in<br>36.0 mm | –<br>– | 5 ton alloy<br>swivel | CR #7<br>eyenut | >5<br>>5 | 51 lb<br>22 kg |
| 2,000 lb<br>1,000 kg | 1 lb<br>0.5 kg | 18.2 in<br>463 mm | 2.25 in<br>57.1 mm | 3.06 in<br>77.7 mm | 1.44 in<br>37.0 mm | 1.41 in<br>36.0 mm | –<br>– | 5 ton alloy<br>swivel | CR #7<br>eyenut | >5<br>>5 | 51 lb<br>22 kg |
| 5,000 lb<br>2,500 kg | 1 lb<br>0.5 kg | 20.4 in<br>519 mm | 2.50 in<br>64.0 mm | 3.50 in<br>89.0 mm | 1.81 in<br>46.0 mm | 1.69 in<br>42.9 mm | –<br>– | 7 ton alloy<br>swivel | CR #8<br>eyenut | >5<br>>5 | 60 lb<br>26 kg |
| 10,000 lb<br>5,000 kg | 2 lb<br>1 kg | 20.4 in<br>519 mm | 2.50 in<br>64.0 mm | 3.50 in<br>89.0 mm | 1.81 in<br>46.0 mm | 1.69 in<br>42.9 mm | –<br>– | 7 ton alloy<br>swivel | CR #8<br>eyenut | >5<br>>5 | 60 lb<br>26 kg |
| 20,000 lb<br>10,000 kg | 5 lb<br>2 kg | 28.4 in<br>722 mm | 4.00 in<br>101.6 mm | 6.25 in<br>159 mm | 2.62 in<br>66.5 mm | 2.41 in<br>61.2 mm | –<br>– | 15 ton alloy<br>swivel | CR #11<br>eyenut | >7<br>>6.5 | 103 lb<br>45 kg |
| 30,000 lb<br>15,000 kg | 10 lb<br>5 kg | 29.9 in<br>760 mm | 4.00 in<br>101.6 mm | 6.25 in<br>159 mm | 3.00 in<br>76.2 mm | 3.19 in<br>81.0 mm | –<br>– | 22 ton alloy<br>swivel | CR #11<br>eyenut | >5<br>>5 | 123 lb<br>53 kg |
| 50,000 lb<br>25,000 kg | 10 lb<br>5 kg | 40.9 in<br>1039 mm | 5.00 in<br>127 mm | 6.00 in<br>152 mm | 3.62 in<br>92.0 mm | 3.63 in<br>92.0 mm | 15.0 in<br>381 mm | 30 ton alloy<br>swivel | CR 25 ton<br>shackle #2130 | >5<br>4.9 | 233 lb<br>105 kg |
| 70,000 lb<br>35,000 kg | 20 lb<br>10 kg | 43.1 in<br>1095 mm | 5.00 in<br>127 | 6.00 in<br>152 mm | 4.56 in<br>116 mm | 3.75 in<br>95.0 mm | 15.0 in<br>381 mm | 37 ton alloy<br>swivel | CR 40 ton alloy<br>shackle #2140 | 4.75<br>4.3 | 268 lb<br>120 kg |
| 100,000 lb<br>50,000 kg | 20 lb<br>10 kg | 52.0 in<br>1322 mm | 5.75 in<br>146 mm | 6.65 in<br>169 mm | 5.06 in<br>129 mm | 4.25 in<br>108 mm | 16.25 in<br>413 mm | 45 ton alloy<br>swivel | CR 55 ton alloy<br>shackle #2140 | 4.5<br>4 | 418 lb<br>188 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:

| | | Hook | Eye Nut or Shackle | Safety Factor | Shipping Wt |
|---|---|---|---|---|---|
| | | 60 ton alloy<br>swivel | CR 55 ton alloy<br>shackle #2140 | 5<br>4.5 | 508 lb<br>230 kg |
| | | 75 ton alloy<br>swivel | CR 55 ton alloy<br>shackle #2140 | 5<br>4.5 | 628 lb<br>285 kg |

# 7.0    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 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**

On/Off

**Displayable Units**

Pounds or kilograms selectable

**Power**

12 volt rechargeable battery, 115/230 VAC battery charger included

**Operating Time**

Up to 85 hours between charging with typical use

**Operating Temperature**

Legal-For-Trade: 14ºF to 104ºF (-10ºC to 40ºC)
Industrial: -40ºF to 176°F (-40ºC to 80ºC)

**Calibration**

Digital via MSI ScaleCore remote display

**Radio Link Effective Range**

Typically 100 to 300 ft line of sight

**Radio Link**

802.15.4 at 2.4 GHz

**Warranty**

One-year limited warranty

**Approvals**

CoC Number: 19-122
500 lb to 70,000 lb