



UMT™ 200 Series Bi-  
Sorter Operating and  
Installation  
Instructions

# **UMT™ 200 Series Bi-Sorter Operating and Installation Instructions**

**REVISED: 25-JAN-18**

## **Introduction**

The UMT™ 200 Series Bi-Sorter is designed to provide easy control of trash flow, and to display information on the operations of the connected Easy-Wave™ Trash Chute system.

The Bi-Sorter is equipped with a Lock Out toggle switch, an Emergency Stop button on a magnetized base, an Access Door, and a user interface, called the Intelli™ Chute Controller. The Intelli™ Chute Controller consists of a 32 character LCD, a “Mode” push button, an “Access” keyed momentary switch, and a red “Busy” indicator LED. Cart full infrared sensors and cart detection infrared sensors are optional features.

The Bi-Sorter signals alarms to the user in the event of safety issues with the Bi-Sorter, a fire alarm, and any interruption of communications between the Trash Chute and the Bi-Sorter. If cart full and cart detection sensors are installed, alarms may also be signaled in the event of a full sorting cart, or lack of a cart under the Bi-Sorter. The locking out of sorting options, manual operation of the Bi-Sorter, and diagnostic readouts are also provided.

This manual will provide information about the operation, installation, and maintenance of the UMT™ 200 Series Bi-Sorter.

# DANGER

## GROUNDING INSTRUCTION

This appliance must be grounded. In the event of malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This appliance is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER – Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the appliance is properly grounded. Do not modify the plug provided with the appliance – if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

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# Specifications

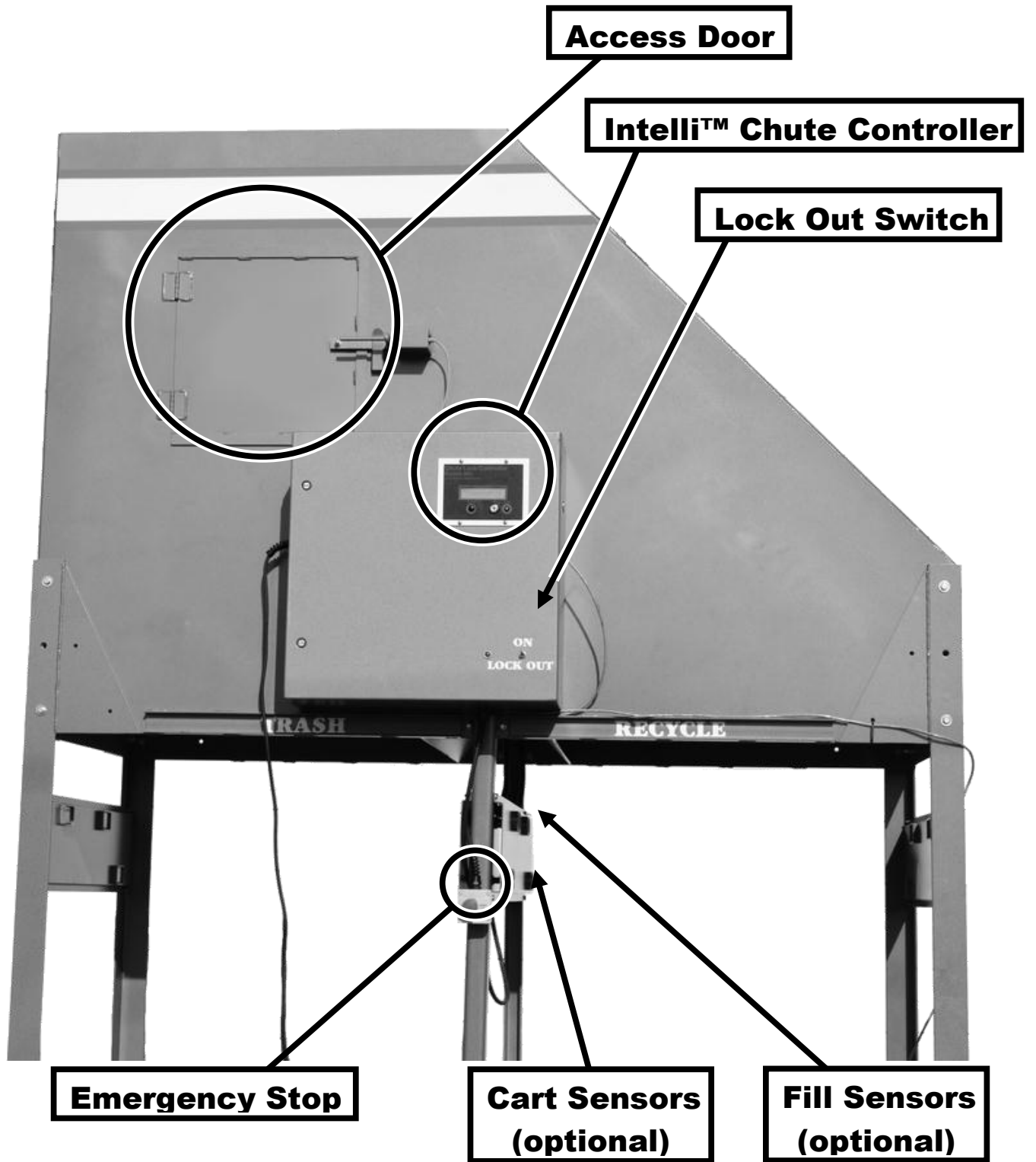
## ***Sorter Specifications:***

- The sorter body is constructed of 1/4” thick steel which is continuously welded and has a powder coat finish.
- The diverter plate is constructed of 1/2” thick heavy duty grade aluminum.
- Support legs are adjustable to accommodate various compactors and containers.

## ***Electrical Specifications:***

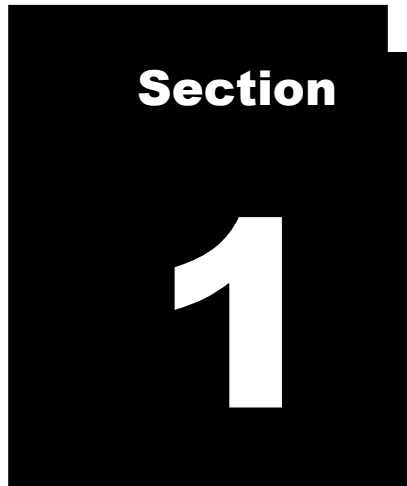
- The main control panel runs 115VAC nominal / 6 Amps Maximum.
- All controls are 24 Volt DC.
- Main controller has a 32 character backlit LCD.
- All electrical components are UL listed.
- Sensor based operation - no mechanical limit switches to fail or go out of adjustment.
- System status is displayed at all times.
- Access door is safety interlocked to disable sorter when opened.
- Optional bin full sensors - Bi-Sorter is locked out when bin is full.
- Optional bin present sensor - Bi-Sorter locked out if bin is not present.
- All mechanical parts are enclosed to eliminate pinch point injuries.

# Part Locations



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A black square graphic with the word "Section" in white at the top and a large white number "1" in the center.

## **Standard Operation**

The UMT™ 200 Series Bi-Sorter is operated by input from the connected Easy-Wave™ Trash Chute. A user of a Trash Chute door selects to which side of the Bi-Sorter to send trash: Garbage or Recycle. This selection is sent to the Bi-Sorter, which automatically moves the diverter plate inside the Bi-Sorter to direct the trash to that selection. If the diverter plate is already in the correct position, the Trash Chute door unlocks immediately, allowing the user to open it and deposit their trash. If the diverter plate needs to move, the Trash Chute door remains locked until the diverter plate reaches the correct position; this takes only 2-3 seconds.

The red “Busy” LED and the two-line LCD on the Intelli™ Chute Controller indicate the current status of the Trash Chute and Bi-Sorter. The Lock Out switch is used for preventing operation of the Trash Chute and Bi-Sorter at any time, if it is necessary to remove and replace a sorting cart, for example. The Emergency Stop switch stops all operation of the Bi-Sorter and Trash Chute and cuts power to the Bi-Sorter; this is a safety feature.

### ***Standard LCD Messages:***

During standard operation the LCD will display the sorting option to which the Bi-Sorter is set to direct trash, and the status of all the doors on the trash chute. An example display message may be:

**SET FOR GARBAGE**

## **ALL DOORS CLOSED**

When any door on the trash chute is opened, the message on the second line of the LCD will change to indicate which door, as below:

### **SET FOR GARBAGE DOOR OPEN: 2**

The door number indicated corresponds to the building level on which the open trash chute door is located. The message will return to “All Doors Closed” when all doors have been closed.

The upper line of the LCD will always display the status of the Bi-Sorter during standard operation. The Bi-Sorter may be set to “Garbage” or “Recycle.”

The 'Set for...' message indicates that the Bi-Sorter is currently locked in the position that will feed the sorting option indicated. When the user of a trash chute door selects a different sorting option, the Bi-Sorter will switch to that option. To indicate this, the “Busy” LED will flash and the first line of the LCD will change, as below:

### **MOVE TO RECYCLE DOOR OPEN: 2**

Once the Bi-Sorter has locked into the new sorting option, the LCD will return to displaying the new option that has been set, as below:

### **SET FOR RECYCLE ALL DOORS CLOSED**

In some situations, a sorting option may be locked out completely and all trash will be directed to the other sorting option no matter what is selected at a Trash Chute door. In this case, the LCD will display the following type of message:

### **\*\*GARBAGE ONLY\*\* ALL DOORS CLOSED**

This shows to which sorting option the Bi-Sorter is locked. (*To learn more about locking*



*out sorting options, refer to Section 3.)*

***“Set for Middle”:***

In the event of a power failure, the following display may appear on the LCD:

**SET FOR MIDDLE  
ALL DOORS CLOSED**

This message indicates that the diverter plate was in motion when power was lost, and is currently positioned between the Garbage and Recycle sorting options. It is recommended that the Service Menu (*described in Section 3*) be used to move the diverter plate completely to a sorting option.

***Use of the “Lock Out” Switch:***

When the Lock Out switch is toggled to the “Lock Out” position, the “Busy” LED will flash and the following message will display on the LCD:

**SORTER LOCK OUT  
CART CHANGE SAFE**

This indicates that both the Easy-Wave™ Trash Chute and the Bi-Sorter have been locked out. No chute doors may be opened and the Bi-Sorter's motor will not operate. Toggling the switch back to the “On” position will return the Trash Chute and Bi-Sorter to normal operation.

***Use of the “Mode” Button:***

During standard operation, the “Mode” button is useful for displaying additional information about the operations of the Bi-Sorter. Pressing the “Mode” button once will change the LCD to the following display:

**STOP -B 0  
A: --C B: --C**

The first line of the LCD indicates the status of the Bi-Sorter's motor and diverter plate. The motor can be in one of nine different states:

- “Stop:” the motor is currently stopped.
- “Start:” the motor is accelerating.
- “Run:” the motor is running.
- “Park:” the motor is decelerating.
- “Recov:” an error in relocating the diverter plate was detected.
- “Back:” the motor is reversing direction to return the diverter plate to its previous position.
- “Diag:” the motor is operating under diagnostic mode (*described in Section 3*).
- “Alarm:” one of the Bi-Sorter's alarm states (*described in Section 2*) has been triggered and is preventing the motor from activating.
- “Error:” a fatal fault has been detected with the motor and it requires service. (**Note: Maintenance of equipment should only be undertaken by qualified, trained personnel.**)

The next two characters on the first line of the LCD indicate the status of the sensors inside the Bi-Sorter that detect the position of the diverter plate. A dash indicates that a sensor has not been triggered. Sensor “A” is triggered when the plate is in the Garbage position, and sensor “B” is triggered when the plate is in the Recycle position. Therefore, this part of the readout could read either “A-”, “-B”, “--”, or “AB.”

- “A-” indicates the Garbage sensor is triggered and the Recycle sensor is not.
- “-B” indicates the Garbage sensor is not triggered and the Recycle sensor is.
- “--” indicates the diverter plate is between the two sensors and is triggering neither.
- “AB” indicates an alarm state.

The final number on the first line of the LCD shows the electrical current being used by the motor, in amps.

The second line of the LCD indicates the status of the cart and full sensors. As with the first line of the LCD, “A” translates to Garbage and “B” translates to Recycle. The three characters after each letter correspond to the two full sensors and the cart sensor on each side of the Bi-Sorter. Here again, a dash indicates that a sensor has not been triggered.

- The first character could be either “1” or “-”, and the second could be either “2” or “-”, describing which full sensor has been triggered, if any.
- The third character could be either “C” or “-”, indicating that the presence of a cart has triggered the sensor, or not.

Pressing the “Mode” button a second time will change the LCD to the following display:

**MOTOR COMM GOOD**

## **Err:0 Tot:0**

This indicates the status of the Intelli™ Chute Controller's communications with the Bi-Sorter's motor. The first line indicates the condition of these communications, which could be either "Motor Comm Good" or "Motor Comm Fault." The second line indicates the number of communication errors that have occurred with the motor, both currently and in total.

Pressing the "Mode" button a third time will change the LCD to the following display:

## **CHUTE COMM GOOD**

This indicates the status of the Bi-Sorter's communications with the Easy-Wave™ Trash Chute. This could read either "Chute Comm Good" or "No Chute Comm."

Pressing the "Mode" button a fourth time will return the LCD to the standard operational display.

## Section

# 2

## Alarm Signals

In the event that the UMT™ 200 Series Bi-Sorter's alarm system is triggered, Bi-Sorter operations will be locked out. Standard operation cannot resume until the alarm message is cleared. Use this section by checking for the conditions listed below to determine what the alarm system is indicating.

### ***“Alarm: Full” - Full Sorting Cart (optional feature):***

The “Busy” LED flashes and the LCD displays a message like the one below:

**ALARM: Full  
RECYCLE FULL**

When any of the carts located under the Bi-Sorter are detected to be full, a message like this will be displayed indicating which cart is full. The message may indicate “Garbage,” “Recycle,” or “Both.” The full sensors on the Bi-Sorter are only triggered if their infrared beams are interrupted for at least six seconds. ***(Refer to the Part Locations graphic for the location of the full sensors.)*** This message will not clear until the system detects that the indicated cart is no longer full, which means that both full sensors are no longer obstructed.

In systems equipped with a trash and/or recycling compactor, this alarm will also be triggered when the associated compactor is full. It will not clear until the appropriate compactor is emptied.

### ***“Alarm: Cart” - Missing Sorting Cart (optional feature):***

The “Busy” LED flashes and the LCD displays a message like the one below:

## **ALARM: Cart GARBAGE CART**

When any of the sorting carts are not docked with the Bi-Sorter, a message like this will indicate which cart is missing, “Garbage” or “Recycle.” Carts are detected by infrared sensors on the Bi-Sorter. When the beam of a cart sensor is interrupted, this tells the Bi-Sorter that a cart is docked. ***(Refer to the Part Locations graphic for the location of the cart sensors.)*** This message will not clear until the system detects that a cart is docked in the appropriate position.

### ***“Alarm: Safety” - Protecting the User:***

The Bi-Sorter's safety alarm is triggered when it is necessary to lock out the Bi-Sorter to ensure human safety. The “Busy” LED flashes and the LCD displays a message like the one below:

## **ALARM: Safety ACCESS DOOR**

The second line of the LCD will change to indicate the specific safety condition, either “Access Door” or “Emergency Stop.”

“Access Door” indicates that the Access Door on the Bi-Sorter is opened. This message will not clear until the system detects that the Access Door has been closed.

“Emergency Stop” indicates that the emergency stop feature of the Bi-Sorter is engaged. Shortly after the emergency stop is engaged, power to the Bi-Sorter will be cut, and will not return until the emergency stop is disengaged.

### ***“Alarm: Move ERR” - Jammed Diverter Plate:***

The “Busy” LED flashes and the following message is displayed on the LCD:

## **ALARM: Move ERR FLAPPER JAMMED**

This indicates that the Bi-Sorter was not able to move the diverter plate to the requested sorting option. The most likely cause of this error is debris blocking the motion of the diverter plate. This alarm can only be cleared by using the “Clear Move Alarm” option in the Service Menu (*described in Section 3*).

### ***“Host Comm Fail” - Host Communications Failure:***

The “Busy” LED flashes and the following message is displayed on the LCD:

## **\*\*SORTER ALARM\*\* HOST COMM FAIL**

This indicates that there is a failure of communications between the Bi-Sorter and the Easy-Wave™ Trash Chute. This kind of malfunction cannot allow the Bi-Sorter to effectively operate. This is a fault that requires maintenance. (*Note: Maintenance of equipment should only be undertaken by qualified, trained personnel.*)

### ***“Alarm: Comm Err” - Motor Communications Failure:***

The “Busy” LED flashes and the following message is displayed on the LCD:

## **ALARM: COMM ERR MOTOR COMM FAIL**

This indicates that there is a failure of communications between the Intelli™ Chute Controller and the Bi-Sorter's motor. The Bi-Sorter cannot determine if the motor is in operation as a result. This is a fault that requires maintenance. (*Note: Maintenance of equipment should only be undertaken by qualified, trained personnel.*)

***“Alarm: Sensors” - Sensor Failure:***

The “Busy” LED flashes and the following message is displayed on the LCD:

**ALARM: Sensors  
Position Unknown**

This indicates that the sensors on the Bi-Sorter which detect which sorting option is set are malfunctioning. The Bi-Sorter cannot determine what position the diverter plate is in. This is a fault that requires maintenance. ***(Note: Maintenance of equipment should only be undertaken by qualified, trained personnel.)***

***“Remote Lockout” - Trash Chute Master Lockout:***

The “Busy” LED flashes and the following message is displayed on the LCD:

**\*REMOTE LOCKOUT\*  
MASTER LOCKOUT**

This indicates that the master lockout on the Easy-Wave™ Trash Chute has been engaged. The Bi-Sorter cannot operate when it is under master lockout. This message will not clear until the master lockout is disengaged.

***Open Door Alarm:***

The “Busy” LED flashes and the following message is displayed on the LCD:

**SYSTEM ALARM  
OPEN DOOR ALARM**

This indicates that a door on the Easy-Wave™ Trash Chute has been left open for too long. The door must be closed before Bi-Sorter operations can resume.

***Fire Alarm:***

The “Busy” LED flashes and the following message is displayed on the LCD:

**SYSTEM ALARM**  
**\*\*\*FIRE ALARM\*\*\***

This indicates that the fire alarm in the Easy-Wave™ Trash Chute has been triggered. All necessary procedures for evacuating the building and contacting emergency response personnel should be undertaken.



**Section**

**3**

## **Service Operation**

The UMT™ 200 Series Bi-Sorter features a service and diagnostics mode. Accessing this mode of operation changes the readout of the LCD and the operation of the “Mode” button.

To access the service and diagnostics mode, toggle the Lock Out switch to the “Lock Out” position. The “Busy” LED will flash and the LCD will display the following message:

**SORTER LOCK OUT  
CART CHANGE SAFE**

Insert the key into the “Access” key switch on the Intelli™ Chute Controller, and turn it to the right. The “Busy” LED will illuminate steadily and the following message will be displayed on the LCD:

**SERVICE MENU  
Clear Move Alarm**

This indicates that the Service Menu is currently being accessed. While in the menu, the first line of the LCD will always display “Service Menu.” The Service Menu has three options: “Clear Move Alarm,” “Parameters,” and “Diagnostics.” These can be selected by pressing the “Mode” button. The “Busy” LED will remain illuminated while the Bi-Sorter is under service operation.

The “Clear Move Alarm” option will allow the user to clear any movement alarms which have locked out Bi-Sorter operation.

The “Parameters” option will allow the user to lock out any sorting option regardless of instructions from the Trash Chute doors.

The “Diagnostics” option will allow the user to manually operate the Bi-Sorter.

To exit the Service Menu at any time, toggle the Lock Out switch to the “On” position.

### ***“Clear Move Alarm” - Clearing Alarms to Allow Bi-Sorter Operation:***

The following message is displayed on the LCD:

## **SERVICE MENU Clear Move Alarm**

This allows the user to clear any movement alarms that have been triggered. This does not include remote lockouts or fire alarms. ***(For a list of alarms, refer to Section 2.)*** To clear the alarm, turn the “Access” key switch to the right. The LCD will then display the following message:

## **Movement Alarms Cleared!**

Pressing the “Mode” button will return the display to the Service Menu.

### ***“Parameters” - Locking Out Sorting Options:***

The following message is displayed on the LCD:

## **SERVICE MENU Parameters**

Turning the “Access” key switch to the right will bring up the lockout sub-menu. The LCD should now display:

## **LOCKOUT GARBAGE**

### **Side:false**

The options in this sub-menu allow the user to select which side of the Bi-Sorter to lock out. This is useful for preventing trash from being directed to a sorting option that is not in use. Use the "Mode" button to cycle through the sorting options. Turning the "Access" key switch to the right will lock out that sorting option and change the LCD to the message:

## **LOCKOUT GARBAGE**

### **Side:TRUE**

Now the Bi-Sorter will not direct any incoming trash to that sorting option, regardless of any selection made by a user at a Trash Chute door. During standard operation, the LCD will now indicate to which side the Bi-Sorter is directing all trash, with a message like the one below:

**\*\*RECYCLE ONLY\*\***

When all sorting options have been exhausted, the following message will display on the LCD:

**\*END OF SECTION\***

Pressing the "Mode" button will return the display to the Service Menu.

### ***"Diagnostics" - Manually Operating the Bi-Sorter:***

The following message is displayed on the LCD:

## **SERVICE MENU**

### **Diagnostics**

Turning the "Access" key switch to the right will bring up the manual operation sub-menu. The LCD should now display:

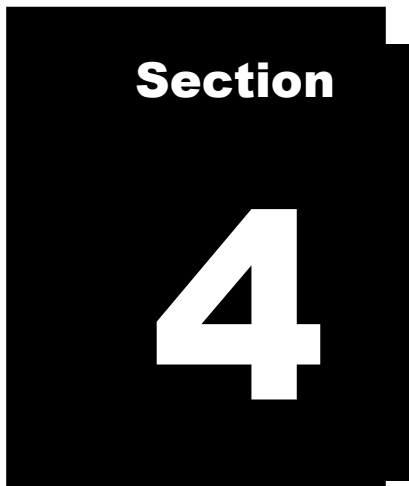
## **ACCESS(key) will Move to GARBAGE**

The options in this sub-menu allow the user to manually operate the Bi-Sorter. This is useful when it is necessary to clear the Bi-Sorter of debris or check if it is operating properly. There are two methods the user may use to manually operate the Bi-Sorter: "Move" and "Jog." Selecting "Move" will move the Bi-Sorter's diverter plate to the selected sorting option with a single turn of the "Access" key switch. Selecting "Jog" will move the diverter plate toward the selected sorting option only so long as the "Access" key switch is turned. Use the "Mode" button to cycle through the various options. The second line of the LCD will change to indicate which method of manual operation the "Access" key switch will activate. While the "Access" key switch is turned during any of these options, the motor operation screen (*described in Section 1*) will be displayed on the LCD.

When all options have been exhausted, the following message will display on the LCD:

**\*END OF SECTION\***

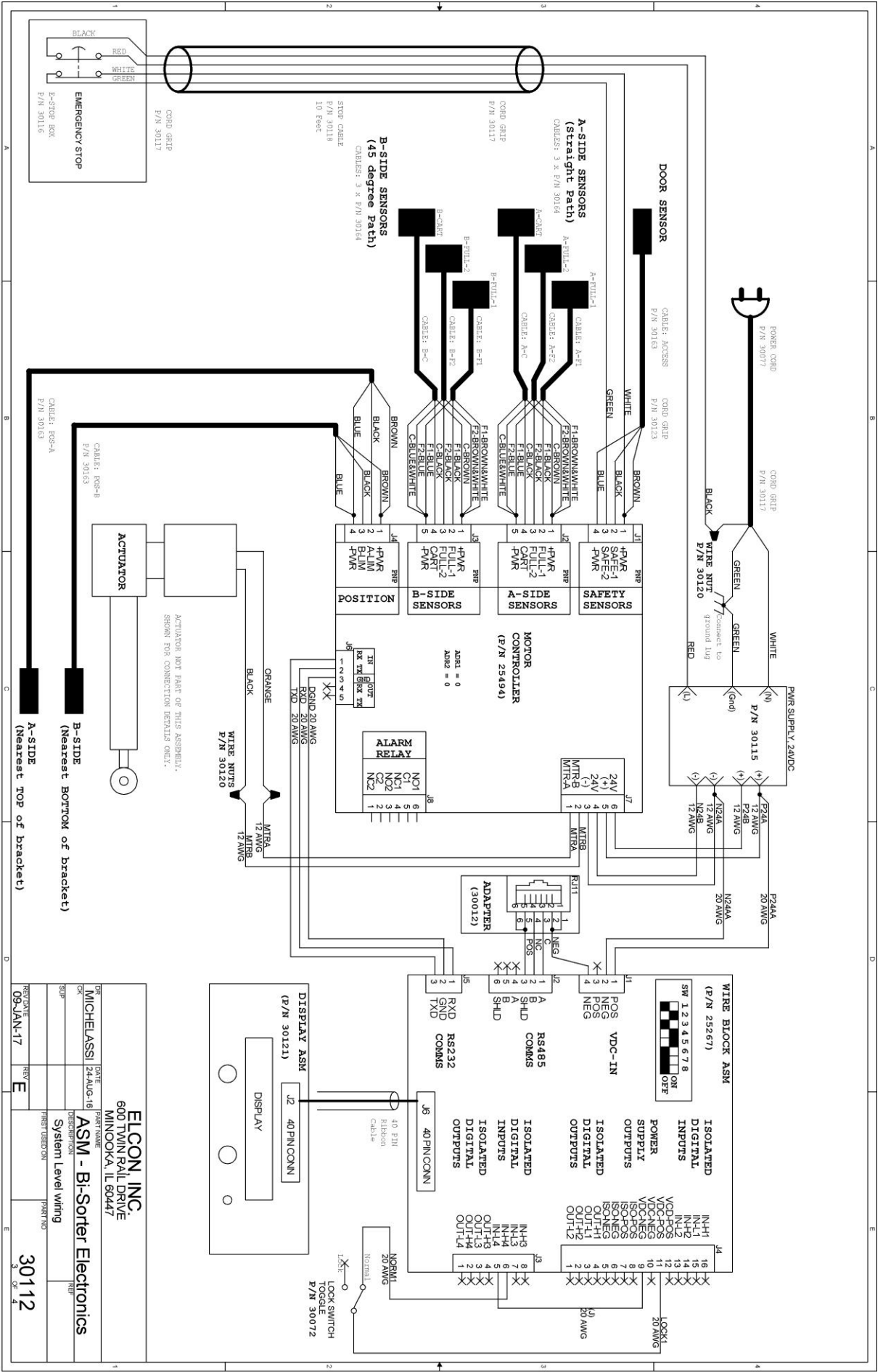
Pressing the "Mode" button will return the display to the Service Menu.

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# Section 4

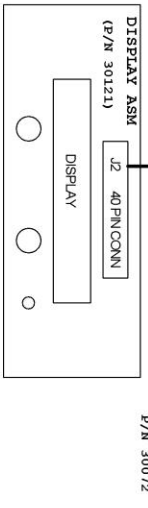
## **Schematic**

The block schematic for all electronics in the UMT™ 200 Series Bi-Sorter can be found on the next page. This drawing can be useful for determining the flow of commands and messages through the system. Use it to locate the appropriate connections when installing the Bi-Sorter and connecting it to other devices.



**ELCON INC.**  
 600 TWIN RAIL DRIVE  
 MINOOKA, IL 60447  
**ASM - Bi-Sorter Electronics**  
 DATE: 24AUG-18  
 DRAWN BY: MICHELIASSI  
 CHECKED BY: [Signature]  
 PART NUMBER: System Level Wiring  
 PART QTY: 1  
 PART NO: 30112  
 REV: E  
 DATE: 09-JAN-17

ACTUATOR NOT PART OF THIS ASSEMBLY. SHOWN FOR CONNECTION DETAILS ONLY.



## Section

# 5

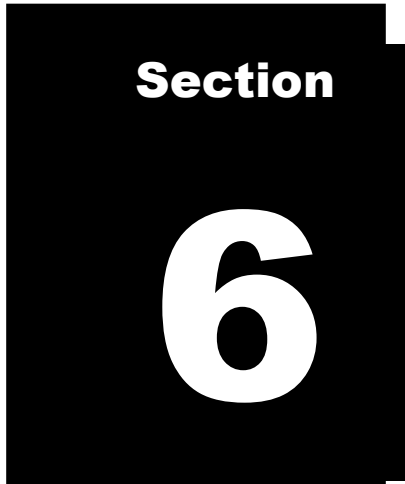
## Installation

The UMT™ 200 Series Bi-Sorter is easy to install. Just follow these steps:

1. Position the Bi-Sorter beneath the Trash Chute, ensuring that the entry point at the top of the Bi-Sorter is aligned with the exit point of the Trash Chute.
2. Adjust the height of the Bi-Sorter from the floor to ensure that the trash and recycle carts and/or compactors can fit easily beneath the Bi-Sorter. Height is set with the Bi-Sorter's legs.
3. Make sure the Bi-Sorter is level. Adjustments may be made to the Bi-Sorter's legs to ensure that it is properly leveled.
4. Using concrete anchors, fasten the legs of the Bi-Sorter to the floor.
5. If the optional full and cart sensors have been purchased, now is the time to install them.
  - a. Place one of the sorting carts under the Bi-Sorter to use as a guide.
  - b. Slide the sensor plate along the center leg of the Bi-Sorter. Raise it to a height where the lower cart sensor is blocked by the sorting cart, but the upper full sensors are not.
  - c. Bolt the sensor plate to the Bi-Sorter.
  - d. Measure the height of the sensor plate from the floor. Bolt the reflector plates on the outside legs of the Bi-Sorter at this height. Make sure the reflectors are facing inward towards the sensor plate.

6. If one or both sides of the Bi-Sorter are to be equipped with a compactor, now is the time to install it. If the compactor is equipped with an American Chute Full Sensor Kit, connect the A-F1 cable from the Bi-Sorter to the provided adapter.
7. Connect the Easy-Wave™ Trash Chute Base Station to the Bi-Sorter.
  - a. Plug an RJ12 cable into the J10 connection on the Base Station.
  - b. Plug the other end of the cable into the RJ12 adapter inside the Bi-Sorter's control box. The adapter can be found to the left of the wire block assembly. ***Refer to the schematic in Section 4 for further details.***
8. Plug in the Bi-Sorter.



A black square graphic with the word "Section" in white at the top and a large white number "6" in the center. The square has a slight 3D effect with a shadow on the right side.

# Section 6

## Maintenance

Basic maintenance of the UMT™ 200 Series Bi-Sorter is not intensive. Establish a set of weekly and quarterly maintenance checks to ensure the Bi-Sorter remains in proper working order.

On a weekly basis, check the full and cart sensors and their associated reflectors to make sure they are clean and unobstructed. Also, inspect the whole of the Bi-Sorter for any physical damage.

On a quarterly basis, grease all the bearings in the Bi-Sorter. All bearings are equipped with grease fittings.

When a trash chute wash-down is about to be performed, select the "garbage" sorting option on the Bi-Sorter to ensure that wash-down effluent flows into the appropriate drain.

***For more in-depth servicing of errors, faults, and mechanical failures, contact a qualified and trained American Chute maintenance expert.***