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INSTRUCTION MANUAL

Models: **LW4201ACS2** **LW4202ACS2**
 LW4201ACS4 **LW4202ACS4**



K-Tech International, Inc.
Torrington, Connecticut USA

Contents

Introduction	3
Operation	3
Estimated Installation Time	3
Parts List	4
Installation	5
Mounting the Sensor(s)	5
Mounting the Enclosure	8
Wiring	9
AC Input	9
Sensor Input	10
Set Point Module (optional)	11
AutoCompensator	12
Bypass Module (if supplied)	13
Adjustments	15
Empty Car	15
Full Car	16
Zeroing	16
Controller Setup	16
Set Point Module (if supplied)	17
Bypass Module (if supplied)	17
Adjusting Using a Digital Multimeter	18
Troubleshooting	20
Specifications	22
Function Modules	22
Warranty Agreement	23

Questions?

**Call our Customer Service Department
1-800-993-9399 or (860) 489-9399**

Warranty Agreement

To Order:

- Mail your Purchase Order to:
K-Tech International, Inc.
P.O. Box 1025
Torrington, CT 06790-1025
- Fax your Purchase Order to K-Tech International, Inc. at (860) 489-4399
- Call in your order to 1-800-993-9399 or (860) 489-9399

Customer Service:

Please call Customer Service at 1-800-993-9399 or (860) 489-9399 for any questions regarding equipment, product literature, request for quote, or for the status of any order placed.

Technical Support:

Please call Technical Support at 1-800-993-9399 or (860) 489-9399 or for any technical assistance you may require regarding K-Tech equipment.

Payment:

- NET 30 DAYS with credit approval (request a credit application)
- C.O.D.
- Major Credit Card
- For International orders, call (860) 489-9399 for details

Shipping Information:

1. All Continental U.S. orders are shipped via UPS-Ground service unless otherwise specified. Alternate shipping methods are billed accordingly.
2. Outside Continental U.S.-request details.
3. Shipping Terms: FOB Origin/Prepaid & Added.

Warranty Policy:

K-Tech International, Inc. warrants equipment of its own manufacture to be free from defects in material and workmanship for a period of one year from date of shipment from factory or appointed distributor to original user.

This warranty does not apply to any products which have been damaged, neglected, altered, abused, used for a purpose other than the one for which they were manufactured, repaired by the customer or any party without K-Tech's authorization, or used in any manner inconsistent with K-Tech's instructions.

K-Tech's entire obligation under this warranty shall be limited (at K-Tech's option) to repair or replacement of any parts which prove to be defective within the warranty period. Defective products must be returned by customer to K-Tech's factory in its original, unaltered form, transportation prepaid.

Prices may be changed and product may be modified or discontinued at any time without notice. K-Tech will not be liable for any costs incurred by its customers in removal or replacement of defective products.

K-Tech International, Inc.'s liability under this warranty, or any other warranty, whether expressed or implied in law or fact, shall be limited to the repair or replacement of defective material or workmanship, and in no event shall be liable for consequential or indirect damages. No representative or person is authorized to assume for us any of the liability in connection with the sale of our products.

Repair Policy:

K-Tech International, Inc. customer repair policy requires that all customer repairs have a preassigned Return Authorization (RA) number. This system assists us in better serving our customers by ensuring accurate identification and prompt turnaround for returned product. If you need to return a product for repair, please contact our Customer Service Department at 1-800-993-9399 or (860) 489-9399 for a Repair Authorization (RA) number. Please have the following information available when requesting authorization:

1. Bill To and Ship To addresses
2. Name and telephone number of contact person for this Repair Authorization (RA)
3. Purchase Order # for this Repair Authorization (RA)
4. Job site name
5. Quantity, model number(s), and serial number(s)
6. Brief description of problem experienced with the unit(s)

Shipping:

Please reference the Repair Authorization (RA) number on the outside of all cartons and on all paperwork enclosed with the product. Undocumented returns run the risk of being lost and are untraceable. All material must be shipped on a Freight Prepaid basis. Collect shipments will be refused.

Credit Policy:

Only "unopened" product which is returned within **30 days** from the original ship date will be accepted for credit. All products returned will be subject to a minimum 15% restocking charge.

All returns must have prior authorization. Call 1-800-993-9399 or (860) 489-9399.

Specifications

Enclosure:	steel NEMA Type 1 (standard) 8 1/4"H x 14"W x 3"D (21 cm x 36 cm x 7.6 cm) 8 1/4"H x 15 1/2"W x 3"D (21 cm x 39 cm x 7.6 cm) <i>with flange</i>
Sensor(s):	1"H x 7"W x 1/4"D (26 mm x 178 mm x 6.4 mm) bar 8' (2.4 m) cable
Power Input:	100 - 240 VAC, 47 - 63 Hz, 0.6 A @ 115 VAC to 0.45 A @ 240 VAC
Output:	NO/NC dry contact signals (standard) 1 - 4.5 VDC (optional)
Resolution:	< 50 lbs (< 23 kg) or 2% (typical installation)
Repeatability:	< 2%
Temperature:	0 to 100°F (-18 to 38°C)
Humidity:	20 - 85% non-condensing
Drift/°F:	0.3% FS (typical, without AutoCompensator)
Zero Reset:	< 1%
Correction:	± 40% offset (~ 4 VDC)
Input:	120 VAC ground (pull-down)
Approvals:	ETL (UL, CSA) Safety: Conforms to ASME Std. A17.5-1996 Certified to CAN/CSA Std. B44.1-96

Function Modules

Set Point Module

Adjustments:	0 - 100% of maximum load
Output:	Two independent DPDT NO/NC contacts rated 10 A - 28 VDC; 1/4 HP - 120 VAC

Bypass Module

Adjustments:	Set and Reset 0 - 100% of load (Reset < Set)
Output:	Single DPDT NO/NC contacts rated 10 A - 28 VDC; 1/4 HP - 120 VAC

Introduction

Thank you for purchasing the K-Weigh Intelligent Load Weighing system. The K-Weigh is the cost effective, easy to install, low maintenance elevator load weighing solution. It is effective for both modernization and new construction of traction elevators with both isolated and non-isolated platforms.

The K-Weigh is available in models to interface with virtually any controller, providing the information necessary to optimize elevator traffic flow and improve passenger safety and comfort. This includes software-based controllers that require a continuous voltage signal, and relay-based controllers that require discrete "dry contact" signals.

Operation

The K-Weigh system uses a crosshead mounted deflection sensor. As weight is added to the car, the system senses the bending of the crosshead. This is converted to a load signal and sent to the controller.

As the elevator moves up the hoistway, an increasing amount of traveling cable and compensating ropes/chains will hang from underneath. This added weight will pull on the car frame, and be detected by the K-Weigh as added weight, even though the actual weight inside the car has not changed. This can cause significant error in the load weighing signal, especially in runs over 100 feet. This K-Weigh system is equipped with our AutoCompensator feature to adjust for this weight difference and accurately report the true weight of the load in the car.

If at any time of this installation you have any questions, please feel free to contact our Customer Service Department at 1-800-993-9399, or send e-mail to support@ktechonline.com.

Estimated Installation Time

The times listed below are based on an installation performed by a two person team. Times will vary depending on site circumstances and installation crew experience.

Sensor and Box Installation	1.5 hours
AC and Signal Wiring	2 hours
Setup and Adjustments	1 hour

Parts List

Check that the following parts are included:

1. Electronics Enclosure (Gray Box)
(includes power supply and amplifier circuit board)
2. One or Two Sensors with Mounting Hardware:
bolts (2)
tapered washers (2)
flat washers (4)
nuts (2)
Nylok nuts (2)
3. Drill Guide/Sensor Cover
with Mounting Hardware
4. Quick Start Card for
Sensor Installation
5. Installation Manual
6. Bag containing Hardware:
wire ties (2)
rubber grommets (2)
cable clamps (adhesive
mount) (2)
fork terminal (1)



AutoCompensator reset relay does not activate

- Check that the K-Weigh is generating the AutoCompensator reset signal properly. To do this:
 1. Manually ground the K-Weigh relay input (connected to the door switch)
 2. After 60 seconds, the AutoCompensator should reset.
- Check wiring to be sure the signal from the door switch is reaching the relay in the K-Weigh.

RED "RE-CALIBRATE" LED is flashing

- If the system goes out of calibration by more than 4 VDC in one direction, the RED "RE-CALIBRATE" LED will blink. You will need to re-zero the amplifier(s).
- Simply bring the empty elevator to the middle landing (halfway up hoistway run) and follow the directions under Adjustments, Empty Car (page 15). You do not need to readjust the Full Car setting.

NOTE: Weights are NOT needed for this procedure.

Questions?

**Call our Customer Service Department
1-800-993-9399 or (860) 489-9399**

Troubleshooting

Below are some tips for troubleshooting some common problems. If you are unable to find a solution here, please contact our Customer Service Department at 1-800-993-9399 or support@ktechonline.com.

Cannot Set Empty Car with COARSE adjustment

- Check that Sensor is properly connected to the amplifier board (see page 10).
- Using a Digital Multimeter (DMM) set to read 10-20 VDC, measure the voltage between T1 and Gnd (or T3 and Gnd for the second sensor on dual sensor systems). This voltage should change as you turn the COARSE adjustment.

LEDs did not cycle when power turned on

- Check power supply for +12 VDC and -12 VDC (± 0.5 VDC).
- Check power connection to amplifier board.

Output is not the sum of Channel A and Channel B (dual sensor systems only)

- Check that jumper is correctly installed in position 2.

Output seems to be drifting

Drift of around 0.1 VDC is not unusual. Adjacent car can cause some local drift through structural effects.

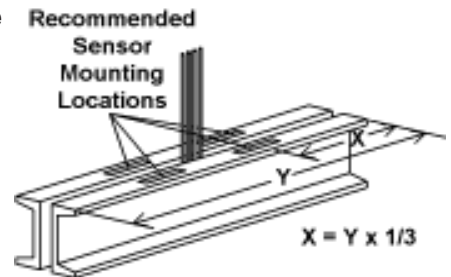
- If excessive drifting occurs immediately after installing system, sensor may still be settling mechanically. Wait at least 2 hours and check settings.
- Sensor(s) may not be mounted properly. Be sure ALL debris is cleaned from between the sensor and the C-channel and that the sensor is flat and flush to the C-channel surface (a flashlight shone from behind the sensor can be helpful).

Installation

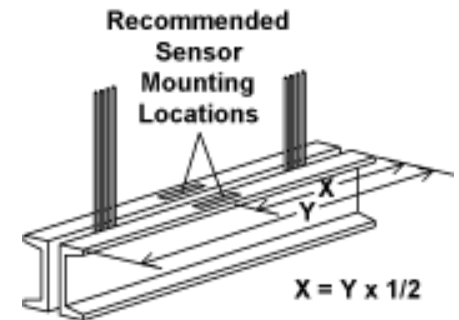
Mounting the Sensor(s)

1. Bring empty elevator to the lowest landing.
2. Identify the proper mounting location for the sensor(s). Sensor placement will vary depending on the roping configuration of the elevator. "Most common are:

Single Sheave/Center Hitch Plate



Dual Sheave



3. Prepare the C channel surface by removing any paint, coatings, or bumps in the mounting area. Use a belt sander if necessary.
4. Place the drill guide/sensor cover on the C channel against the open side and C-clamp it in

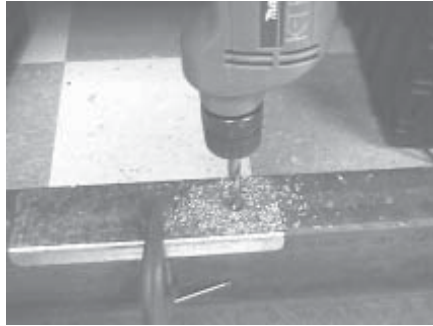


Drill guide in place

place.

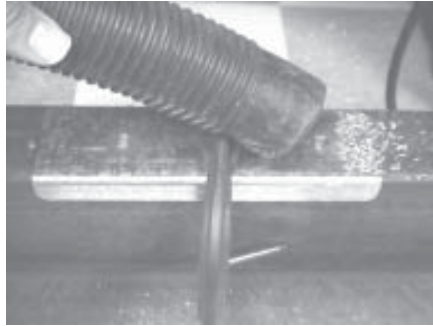
5. Holding drill vertically, drill two holes through the guide and C- channel using a 3/8" bit.

NOTE: Be sure to hold drill perpendicular to the top of the C-channel surface.



Drill holes

6. Clean up ALL debris.



Clean up ALL debris

7. File any edges off the drilled holes to assure flatness.



File hole edges

Full Car

1. Add the **full car weight**. Be sure the load is **evenly distributed**.
2. Set DMM to read VDC and connect RED (positive) lead to T5(A) and BLACK (negative) lead to Ground (next to black DC power input connector).
3. Adjust the GAIN pot for Channel A until you read **positive or negative** 1 ± 0.03 VDC.

NOTE: If you are unable to reach 1 VDC, set SW1 for the next higher gain and repeat from Empty Car Step 4 (see GAIN Table printed on board to left of SW1).

4. If the reading is -1 VDC, set switch SW3 to minus (-) position (if the reading is +1 VDC do nothing).
5. If using two sensors, move RED (positive) lead to T6(B) and repeat steps 3 and 4 for the Channel B; reference switch SW4 for step 4.
6. To check your setup, move RED (positive) lead to LW+ test point next to the output connector. You should read 4.5 ± 0.4 VDC.

Zeroing

1. Remove all the weight from the car.
2. Close car doors. Wait for at least 65 seconds to allow for a reset to occur (reset is set for 60 seconds).

Proceed to the adjustments for the appropriate function modules supplied with your system:

Set Point Module Adjustments page 17

Bypass Module Adjustments page 17

Adjusting Using a Digital Multimeter

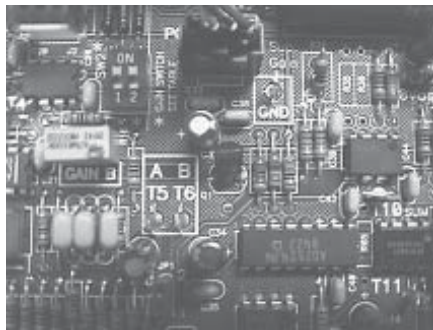
If you would prefer to use a Digital Multimeter (DMM) for the adjustment and calibration of the K-Weigh system, follow the instructions below.

Empty Car

1. Turn on AC power to the system and **allow to sit for 30 minutes** (the LEDs will cycle for a few seconds).
2. Bring empty elevator to the middle landing (halfway up hoistway run).

NOTE: Use the nearest floor above or below halfway if run has an even number of floors.

3. Set switch SW3 to plus (+) position.
4. Set DMM to read mVDC; connect RED (positive) lead to T5(A) and BLACK (negative) lead to Ground (next to black DC power input connector).
5. Adjust the COARSE and FINE pots until you read 0 ± 20 mVDC.



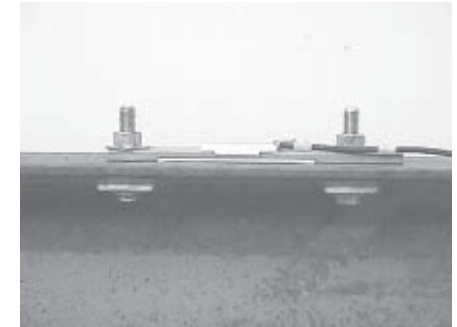
Ground and test points T5(A) and T6(B)

NOTE: This is a sensitive reading. You may see the yellow LEDs flicker once set. This is OK.

6. If using two sensors, move RED (positive) lead to T6(B) and repeat steps 3 – 5 for Channel B; reference switch SW4 for step 3.

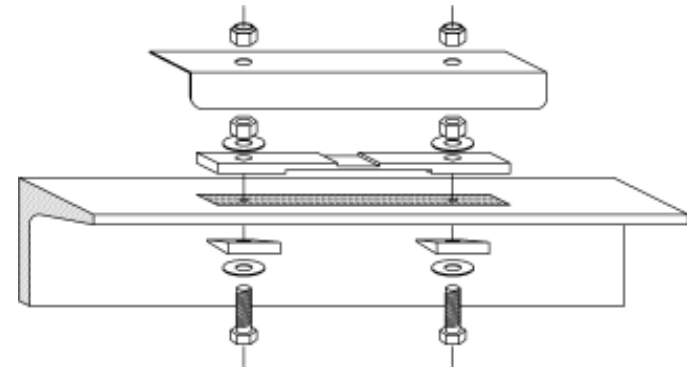
8. Install the sensor using the hardware provided:

- a. Place a flat washer and a tapered washer on the bolt.
- b. Insert through holes in crosshead and sensor from the underside.
- c. Place flat washer and nut on top of bolt.
- d. Tighten to 20-30 ft-lb.

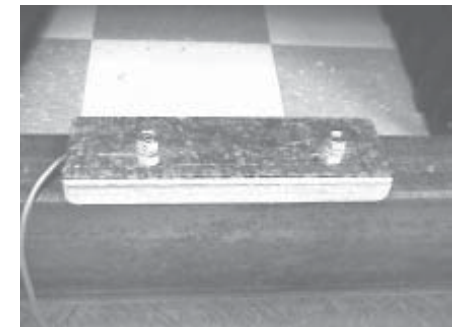


Hardware installed

NOTE: Tapered washer must be oriented correctly: wide side out and parallel to the open side of the C channel.



9. Place the drill guide/sensor cover on the exposed bolt threads and secure in place with the Nylok nuts supplied. Snug each Nylok nut down, then back off 1/8-1/4 turn. The cover should feel slightly loose.



Installed sensor and cover

10. The sensor cable can exit out of either side. Be sure to secure the cable between the sensor and the electronics box close to the C channel using plastic wire ties or other non-invasive means.

ALERT! After mounting the sensor(s), allow at least 30 minutes for them to mechanically settle.

Mounting the Enclosure

Locate a suitable mounting location for the enclosure. It should be close to the sensor(s), and allow 14" (36 cm) clearance for the cover to open fully.

Be sure you will be able to get into the enclosure to make adjustments.

The enclosure has four mounting holes through the bottom flanges, located in a rectangular pattern 14.75" X 6.75" (37.5 cm X 17.1 cm). Mount the enclosure using at least two of these mounting holes (If unable to mount as pictured, use angle brackets or similar method).

ALERT! If you find it necessary to drill any holes in the box, "BE VERY CAREFUL to vacuum up ALL the filings. Any filings on the electronics will cause erratic operation and/or failure.



Enclosure mounted

Set Point Module (if supplied)

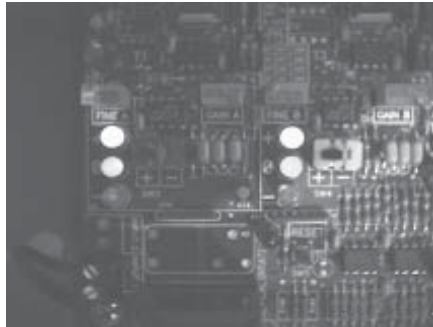
1. Place the required Set Point load (from your engineering specifications) in the center of the car platform with the car midway in the hoistway.
2. If Set Point channel indicator LED for the channel you are adjusting is on, turn the pot counterclockwise until it just goes off. If it is already off, turn the pot clockwise until goes on and then counterclockwise until it just goes off.
3. Remove about 5% of the load to make sure the channel (LED) goes back on.
4. Repeat the above procedure for each Set Point channel.

Bypass Module (if supplied)

1. Place the required Bypass load (from your engineering specifications) in the center of the car platform with the car midway in the hoistway.
2. If Bypass channel indicator LED is on, turn the pot counterclockwise until it just goes off. If it is already off, turn the pot clockwise until it goes on and then counterclockwise until it just goes off.
3. Place the required Bypass Reset load (from your engineering specifications) in the center of the car platform with the car midway in the hoistway. Adjust the Set Point channel for this weight (see above).
4. Remove about 5% of the load to make sure both channels (LED) go back on.

Full Car

1. Add the **full car weight**. Be sure the load is **evenly distributed**.
2. Adjust the GAIN pot for Channel A until **either** of the YELLOW LEDs comes on and the GREEN LED **just shuts off**. Then, back off **slowly** until the GREEN LED **just turns back on**. Turning the pot clockwise will increase the setting, counterclockwise decreases.



YELLOW and GREEN LEDs are on. GREEN LEDs should turn off within 1/4 turn.

NOTE: If you are unable to have either YELLOW LED turn on and have the GREEN LED turn off, set SW1 for the next higher gain and repeat from Empty Car Step 4 (see GAIN Table printed on board to left of SW1).

3. If the (-) YELLOW LED is lit, set switch SW3 to minus (-) position “(if the (+) YELLOW LED is lit, do nothing).
4. If using two sensors, repeat steps 3 and 4 for the Channel B; reference switch SW4 for step 4.

Zeroing

1. Remove all the weight from the car.
2. Close car doors. Wait for at least 65 seconds to allow for a reset to occur (reset is set for 60 seconds).

Controller Setup

Please refer to the Controller Manual for specific instructions. Below is a summary of the steps for your information.

1. Follow any checking procedures given in the controller manual.
2. Complete setting up any other controller motor parameters as described in the controller manual.

Wiring

AC Input

The K-Weigh is equipped with a universal input power supply that will accept from 100 to 240 VAC input.

1. Remove the cover screw and open the cover of the Electronics Box.
2. Pick out one of the knockout holes and bring AC wires through conduit as required by local codes.
3. Route AC HOT, AC RETURN, and Ground through the knockout hole.

NOTE: Rubber grommets are shipped for low voltage signal wires only. DO NOT use for AC input wiring.

4. Strip 1/4” (0.6 cm) insulation off the end of your wires.

5. Connect as follows:

AC HOT (black): connect to screw terminal nearest the wall.

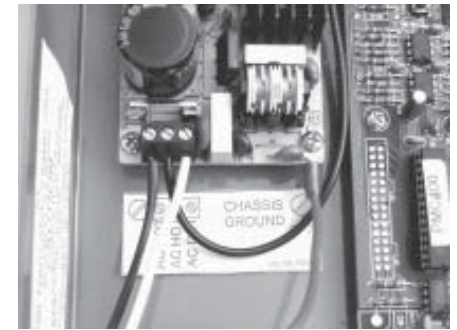
AC RETURN (white): connect to screw terminal farthest from the wall.

GROUND (green): use fork terminal supplied; insert under Chassis Ground screw on the power supply; tighten screw.

The center terminal is pre-wired to one side of the relay on the electronics board.

NOTE: Be sure AC HOT and AC RETURN are correctly wired!!! If not, the operation of the load weighing system will be affected.

NOTE: If the AC input to the power supply is higher than 125 VAC, then you must disconnect the black wire connecting AC HOT to the relay INPUT. Provide 120 VAC to the relay connector separately to utilize the AutoCompensator function (see page 11).



AC wiring detail

Sensor Input

1. Remove the threaded ring from each sensor cable by carefully pushing the connector through it.

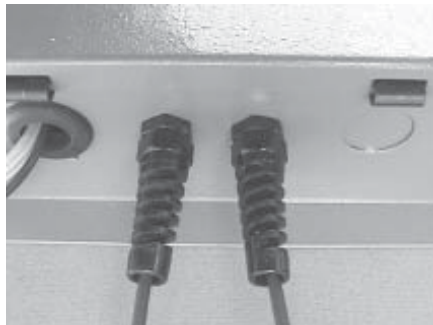
2. Route the cable through the knockout from the outside of the Electronics Box and insert the threaded part of the sensor cable strain relief into the knockout.



Inside of electronics box: threaded rings for sensor cable

3. Carefully push the cable connector thin side first, back through the removed threaded ring, dimple side first. Slide the threaded ring up to the box and tighten on the threads protruding through.

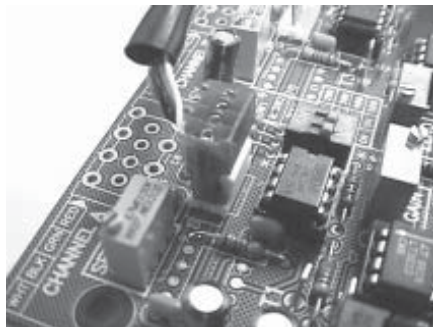
4. Loosen the flexible part of the sensor cable strain relief.



Outside of enclosure: strain relief for sensor cable

5. Pull any excess cable into the box, and roll it up into a 3" - 4" diameter coil and insert it into the clamp inside, tie-wrap or wire tie it as shown in Figure 3.5 leaving enough (about 1 ft) on the free end to connect to the circuit board.

6. Carefully insert the connector on the sensor cable into the appropriate header in the upper left-hand corner of the circuit board as shown noting that wires exit towards the wall of the box nearby.



Sensor plugged into connector

7. Hand tighten flexible part of the sensor cable strain relief against nut on the outside of the box. This clamps the cable in place.

NOTE: If two sensors are supplied, repeat steps 1-7.

Adjustments

The K-Weigh amplifier board is designed with LED indicators to guide the adjustment and calibration. A Digital Multimeter (DMM) is not necessary for a standard setup.

If you would prefer to use a DMM for the calibration of the system, the procedure is included on page 18.

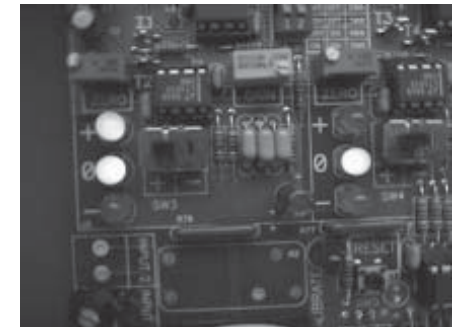
ALERT! When making ALL adjustments, be sure to stand in the SAME POSITION on the car top EACH TIME. If possible, make the adjustments from off the car top (in the hallway).

Empty Car

1. Turn on AC power to the system and **allow to sit for 30 minutes** (the LEDs will cycle for a few seconds).
2. Bring empty elevator to the middle landing (halfway up hoistway run).

NOTE: Use the nearest floor above or below halfway if run has an even number of floors.

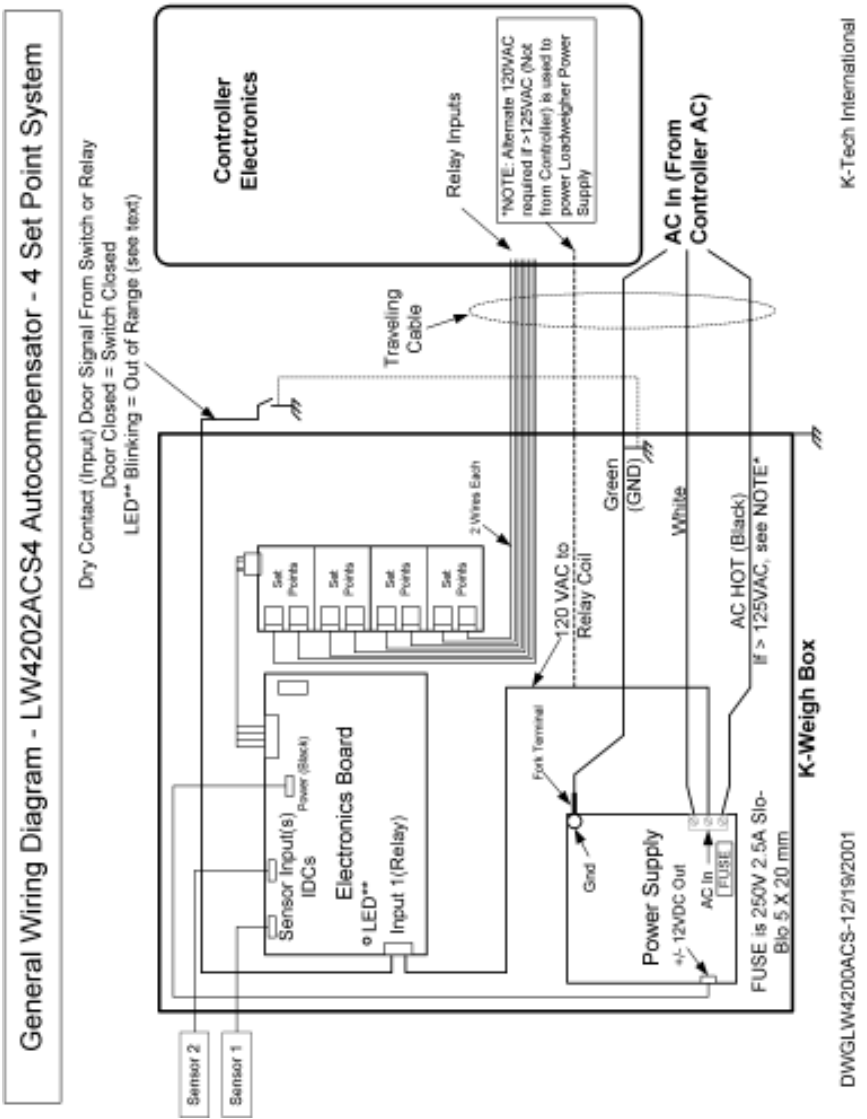
3. Set switch SW3 to plus (+) position.
4. Adjust the COARSE and FINE pots for Channel A until only the GREEN LED are lit. The (+) and (-) LEDs indicate which way the setting is off from Zero. Turning the pots clockwise increases the setting; counterclockwise decreases.



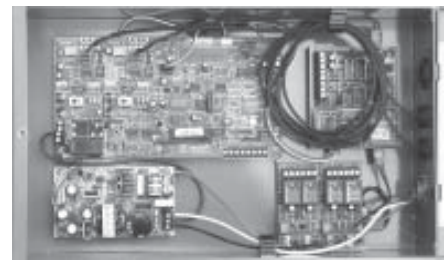
LED indicators: left amplifier is adjusted high; right amplifier is set correctly

NOTE: This is a sensitive reading. You may see the yellow LEDs flicker once set. This is OK.

5. If using two sensors, repeat steps 3 and 4 for Channel B; reference switch SW4 for step 3.



- When you have completed the AC and Sensor wiring, your unit should look like this.

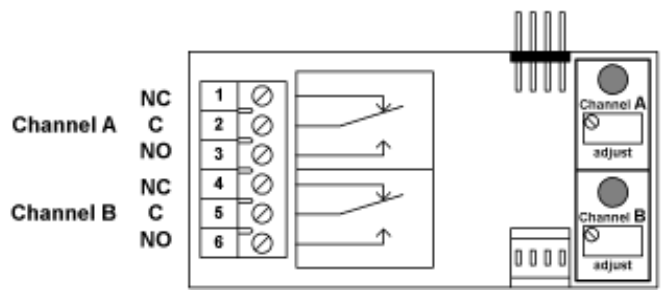


AC and sensor wiring complete

Set Point Module (optional)

The Set Point Module contains two independent and adjustable channels. The relay will trigger above the set weight, and reset below it. The relays operate in fail safe mode: when the load signal is below the set point, the relay is energized and the indicator is on, when it is at or above the set point, the relay is de-energized and the indicator goes off. Set Point Modules can be easily linked together for additional output settings.

- Connect Controller wires to Set Point Modules for either Normally Open (NO) or Normally Closed (NC) contacts.



AutoCompensator

The AutoCompensator feature eliminates the error caused by the weight of the traveling cable and compensating ropes/chains hanging under the elevator. It adjusts this weight variable from the amplifier output as the car moves in the hoistway. The resulting weight indication represents only the contents of the car.

1. Connect one terminal of INPUT 1 to 120 VAC (AC HOT)

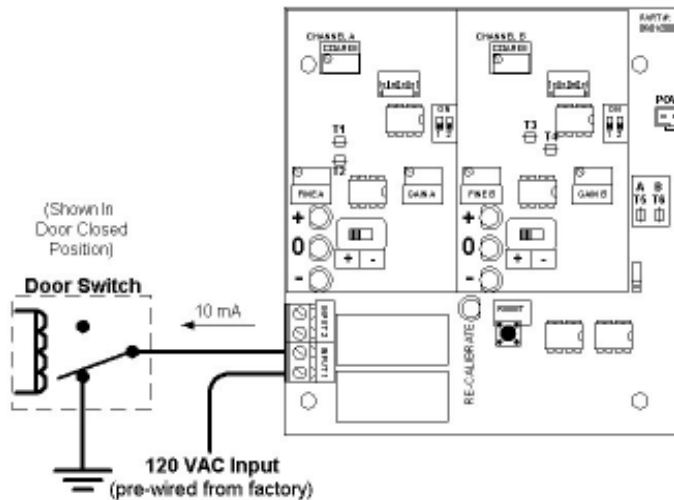
NOTE: This is pre-wired from the factory. Connect to separate 120 VAC source only if the AC supply for the system is greater than 125 VAC (see page 9).

2. Connect the other terminal of INPUT 1 to a wire from a grounding door switch or relay.

NOTE: The door switch relay contact should be “closed” when the cab door is closed, “open” when the cab door is open.

3. The “Re-Calibrate” LED will indicate proper door switch connection. The LED will turn ON when doors are closed and turn OFF when doors are open.

NOTE: The “Re-Calibrate” LED will flash if the system needs to be re-calibrated.

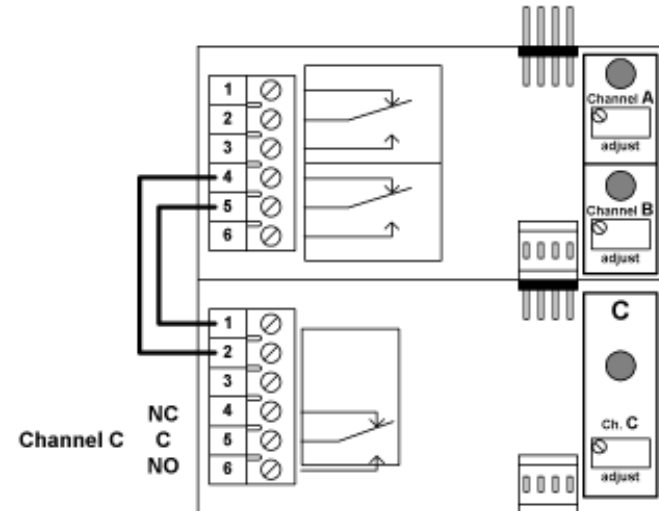


Bypass Module (if supplied)

The Bypass Module is typically used to support the Hall Call Bypass controller function. The module is set to trigger at a set weight; a Set Point Module is set for a lower “reset weight”. In operation, the relay will trigger above the set weight; it resets when the weight in the car has been reduced lower than the Set Point Module trigger weight.

The relays operate in fail safe mode: when the load signal is below the set point, the relay is energized and the indicator is on, when it is at or above the set point, the relay is de-energized and the indicator goes off.

1. Connect the Normally Closed (NC) output of a Set Point Module terminals 1 & 2 of the Bypass Module (Channel C).
2. Connect Controller wires to Bypass Module for either Normally Open (NO) or Normally Closed (NC) contacts.



NOTE: Channel C can be used as a Set Point Channel. Connect a jumper between terminals 1 and 2; follow the Set Point Module adjustment procedure.