ELEVATOR MOTORS CORPORATION

PROGRAMMING INSTRUCTIONS

LOAD WEIGHING CONTROLS MODEL

VK3V WITH EXTERNAL ZERO FEATURE

1. Description of Operation

The purpose of EMCO Load System is to measure, monitor and provide usable information about the load in an elevator cab. This information can be used to protect the passengers from overload conditions and increase the efficiency of the elevator. The system usually consists of a sensor or group of sensors to be mounted on the elevator and a controller. The sensor(s) are used to provide a signal to the controller directly related to the amount of load in the cab. The controller is used to accept this signal and provide usable data to the elevator controller in the form of relays, analog signals or other methods of communication.
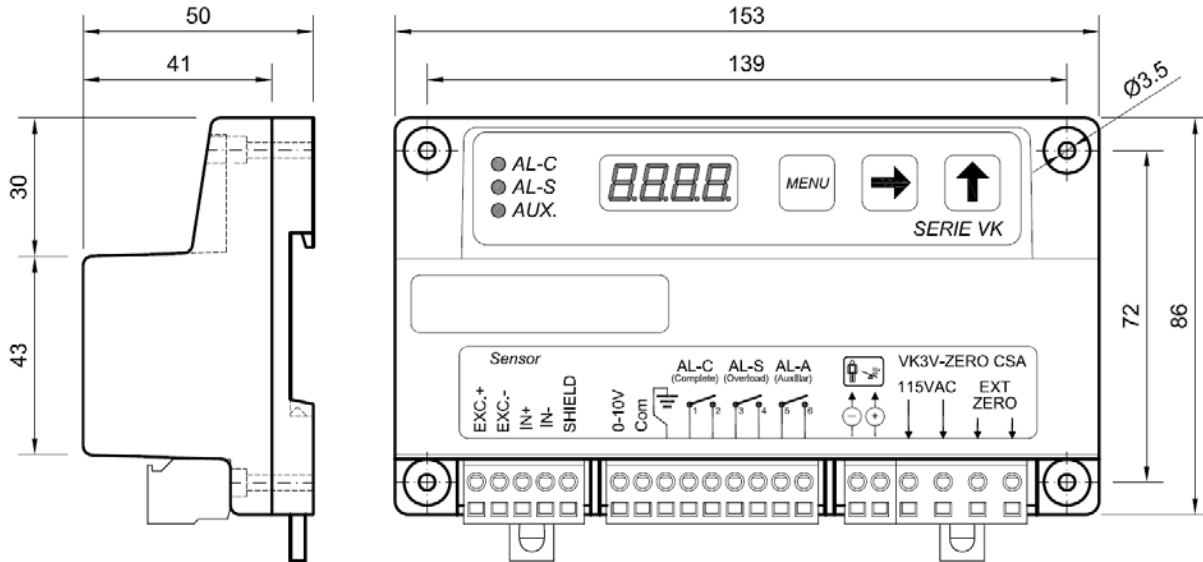
2. Electrical Characteristics

Model	Power Supply	Current	Fuse
VK-3V-Zero	115 VAC	120mA	150mA

3. Contents

1 pc- VK Controller, 1 pc- DIN Rail Mount, 2 pc- Rail Mounting Screws, 1 pc- Terminal Tool/Key, 1 pc- Terminal Cover

4. Installation

Wiring diagrams and dimensions

5. Description of Connections

AL-C, **AL-S** and **AL-A** (if provided) are the relays that change state when the programmed weight values are exceeded.

- $\boxed{AL\ C}$ is usually programmed for the capacity of the cab. When the load in the cab exceeds this value the relay changes state and if using our MB-D display the figure will illuminate as the load increases. Analog output of this setting is 10Vdc.
- $\boxed{AL\ S}$ is usually programmed for overload. When the load in the cab exceeds this value the relay changes state and if using our MB-D display it will activate a buzzer and the KG marking of the display will illuminate.
- $\boxed{AL\ A}$ is an extra relay to be programmed as needed. When the load in the cab exceeds this value the relay changes state.

Power Supply required to operate the controller is shown above the terminals. Standard voltages are 115VAC. See control to confirm input voltage required.

Sensor connections are shown above the terminals on the controller corresponding to the load sensor/cell used.

Ext Zero is an input that allows you to zero out the control if any load value accumulates over time. It is activated by applying an intermittent signal between 24-115 volts for more than 2 seconds. Do not apply continuous voltage to this circuit.

Cabin Display- Our MB Display is the factory supplied display that can be used with the VK Series of controllers. At $\boxed{dISP}$ in the Installation Menu choose **Inc** to use our MBD Display. Based upon the setting of AL-C relay the figure will progressively illuminate starting at the feet and travel up the body of the figure. Upon reaching the setting of AL-C the complete figure will be illuminated. The KG marking will

illuminate and a buzzer will sound upon reaching the AL-S relay setting of the control. If you want to use your own LED display connect to these terminals and at d⌐SP in the Installation Menu choose **LEd** . These terminals provide 7.5 VDC at 75mA maximum based upon the overload settings of the **AL-C** and **AL-S** settings. When connecting your own LED display follow polarity as shown on terminals.

6. Programming Keys

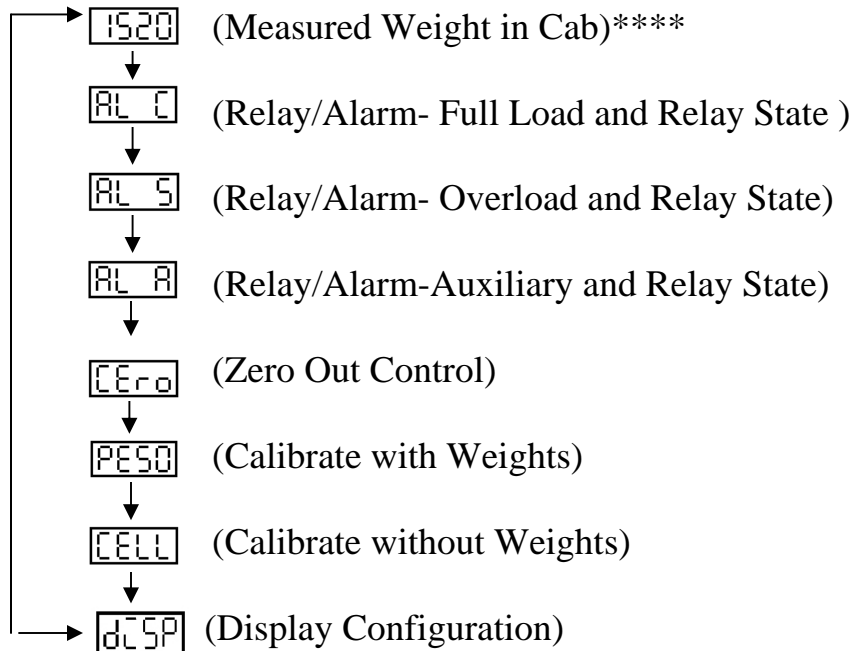MENU **-** Pressing the menu key scrolls through the various programmable parameters of the control.

➡ - Pressing this key enters the specific parameter you are going to program. Once the specific parameter is displayed, pressing this key highlights the digit to be modified.

⬆ **-** Pressing this key will modify the specific digit.

7. **Menu/Programming Order**

Installation Menu
Pressing the MENU **Key** will scroll through the Installation Menu program in the following order:

1520	(Measured Weight in Cab)****
AL C	(Relay/Alarm- Full Load and Relay State)
AL S	(Relay/Alarm- Overload and Relay State)
AL A	(Relay/Alarm-Auxiliary and Relay State)
CEro	(Zero Out Control)
PESO	(Calibrate with Weights)
CELL	(Calibrate without Weights)
d⌐SP	(Display Configuration)

*****Note: Actual value displayed varies with load in cab

8. How to Program

Button/Key Operation

- Press the **[MENU] Key** until the display shows the desired parameter to be changed.
- Press the **[→] Key** to highlight the specific digit to be modified. The digit to be modified will blink.
- Press the **[↑] Key** to change the specific digit.
- Press the **[MENU] Key** twice to save the new value. Once a value is saved the control will display the next parameter.
- If you do not press the **[MENU] Key** twice the changes will not be stored and the controller display will remain at the parameter you were modifying.

9. Calibration

Manual Calibration with Weights

1. Before programming or calibrating sensors and control:
   - Bring cab to middle floor of its total travel. For instance, if travel is 6 stops or floors place cab on the 3rd or 4th floors.
   - Bounce in cab to insure cab is free on guide rails.
2. Properly connect the sensors to control.
3. Power up control and check power supply to control and insure within voltage range of the control supplied.
4. Install sensors to cable per instructions supplied with sensors.
5. **Zero out the controller**:
   - Press **[MENU] Key** till ⌈CEro⌋ is displayed.
   - Press **[→] Key** once.
   - Press **[MENU] Key** once.
   - Controller display will begin to count down. Exit top of cab till unit finishes counting down.
   - ⌈PESO⌋ should be shown on the display. If ⌈PESO⌋ is not shown the value has not been saved in the controller and this step must be done again.
6. **Adjust for weights**:
   - Press **[MENU] Key** till ⌈PESO⌋ is displayed if it is not shown.
   - Add a known weight to the car. Preferably a minimum of **50%** of the car capacity.
   - Press **[→] and [↑] Keys** to manually enter the value in kilograms of the weight in the cab.
   - Press **[MENU] Key** twice.
   - As controller display begins to count down, exit top of cab till unit finishes counting down.
   - Press the **[MENU]** key until the weight is shown on control display. It should be the value of the weights in the cab in kilograms.

7. **Set AL-C** Contact trip level:
    - Press 〔MENU〕 **Key** till $\boxed{\text{AL C}}$ is displayed.
    - Press 〔➡〕 and 〔⬆〕 **Keys** to set contact trip point values. Put the value in kilograms of the weight that will activate the relay. Usually for the **AL-C** contact the capacity of the cab is used.
    - Press 〔MENU〕 **Key and** 〔⬆〕 **Key** to set the contact as normally open or normally closed. The display shows Off or On. **Off** is a normally open contact and **On** is a normally closed contact.
    - Press 〔MENU〕 **Key** twice to save these settings.
8. Repeat **Step 7** for the other contacts to be used. $\boxed{\text{AL S}}$ is normally the overload setting and $\boxed{\text{AL A}}$ is an auxiliary contact to be set as needed by customer.
9. Complete any other wiring including external zero and any other auxiliary programming.

Auto Calibration without Weights (CH or CHD Hydraulic Sensors Must Use Manual Calibration)

1. Before programming or calibrating sensors and control:
    - Bring cab to middle floor of its total travel. For instance, if travel is 6 stops or floors place cab on the 3rd or 4th floors.
    - Bounce in cab to insure cab is free on guide rails.
2. Connect sensors to control. Power up control and check power supply to control and insure within voltage range of the control supplied.
3. Install sensors to cable per instructions supplied with sensors.
4. **Zero out** the controller:
    - Press 〔MENU〕 **Key** till $\boxed{\text{CEro}}$ is displayed.
    - Press 〔➡〕 **Key** once.
    - Press 〔MENU〕 **Key** once.
    - Controller display will begin to count down. Exit top of cab till unit finishes counting down.
    - $\boxed{\text{PESO}}$ should be shown on the display. If $\boxed{\text{PESO}}$ is not shown the value has not been saved in the controller and this step must be done again.
5. Enter **CELL Value** by:
    - Press 〔MENU〕 **Key** till $\boxed{\text{CELL}}$ is displayed.
    - Locate the **CELL** value shown on the connection box of the sensors.
    - Press the 〔➡〕 **Key** once.
    - Press the 〔➡〕 and 〔⬆〕 **Keys** to enter the **CELL value** shown on the connection box of the sensors into the controller. If 2:1 roped application double the value of the cell shown on the connection box of the sensors.
    - Press the 〔MENU〕 **Key** twice to save the CELL value in the controller.
    - $\boxed{\text{dISP}}$ should be shown on the display. If $\boxed{\text{dISP}}$ is not displayed the value of the $\boxed{\text{CELL}}$ has not been saved and this step must be done again.
6. Set **AL-C** Contact trip level:
$$\boxed{\text{AL C}}$$

- Press **MENU** **Key** till ⬚⬚⬚⬚ is displayed.
- Press ➡ and ⬆ **keys** to set contact trip point values. Put the value in kilograms of the weight that will activate the relay. Usually for the **AL-C** contact the capacity of the cab is used.
- Press **MENU** **key and** ⬆ **Key** to set the contact as normally open or normally closed. The display shows Off or On. **Off** is a normally open contact and **On** is a normally closed contact.
- Press **MENU** **Key** twice to save these settings.

7. Repeat Step 7 for the other contacts to be used. $\boxed{AL\ \ 5}$ is normally the overload setting and $\boxed{AL\ \ A}$ is an auxiliary contact to be set as needed by customer.
8. Complete any other wiring including external zero and any other auxiliary programming.

10. Troubleshooting and Errors

- Elevator will not run- Check for any **Err codes** on the display. If there are any Err codes read this section further. If no Err codes, check all controller connections and make sure the proper voltage is provided to power connections. Then check the proper voltage is supplied to the hold circuit and insure the proper sequence of power applied to the hold circuit. Then check fuse. To check fuse, disconnect power to the controller, open the controller by removing the five (5) screws that hold the cover, remove fuse from vertical free mounting (black) fuse holder next to controller transformer and replace with new fuse.

- $\boxed{Err1}$ = Bad load cell connection or damaged load cell- Correct error condition by checking all load cell connections to the controller are per wiring diagram along with inspecting cables for any cuts or broken wires.

- $\boxed{Err2}$ = Negative load cell flow- Correct error condition by checking load cell connections to the controller and insure they are per wiring diagram.

- $\boxed{Err3}$ = Positive load cell flow- Load cells are to small for application and must be replaced with proper units.

- $\boxed{Err4}$ = Polarity error- Correct error condition by checking all load cell connections to the controller are per wiring diagram and reprogram control.

- $\boxed{Err5}$ = MB-D display short- Correct condition by locating short. Disconnect MB-D display, turn off the controller and reconnect the MB-D display.

- $\boxed{Err6}$ = Loss of data in memory- Correct condition by programming controller again.

- $\boxed{Err7}$ = Sensitivity of load cell is small. Recalibrate and reprogram $\boxed{CEro}$ operation, add known weight into car and reprogram $\boxed{PESO}$ operation per Paragraph 9 or Cell operation.

FOR ANY FURTHER ASSISTANCE OR IF ANY QUESTIONS CONTACT:

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