Low Voltage Control (LVC)
With Cycle Counter

Important: This information to be delivered to truck owner/operators.

Quick Start:

1. Enable the module by entering the security code: Press in this order, keys   **A, B, A, B**.
2. Green "READY" LED should light indicating that module is enabled. Note that when the "A" and "B" keys were being pressed the red "POWER ON" LED will light.
3. Operate the chassis lift by pressing the "UP" or "DOWN" keys as necessary. If equipped, the optional "handheld remote control" up/down switch can also be used.
4. Module will turn off after 20 minutes of non-activity. If this happens, simply enter the security code to enable again.
5. If the battery is running low, the module may go into a "Low Battery" condition.
   a. If so, the "LOW BAT." LED will begin flashing.
   b. Chassis lift can be operated for only two more complete cycles.
   c. Alarm will sound while raising or lowering.
   d. After the two lifts, the chassis lift can be *raised* only, and cannot be *lowered* until low voltage condition is corrected.
6. Chassis lift alarm will sound after truck is turned off. Lock hooks if truck is parked for extended periods of time.

A more thorough description of module operation follows:

1) <u>Security Code feature:</u>

To enable the module to operate, a security code must be entered. The code is a sequence of "A" and "B" keystrokes. As the keys are being pressed the red "POWER ON" LED will light indicating that power is present and that the keystroke has been recognized. After the correct sequence has been entered the green "READY" LED will light. Raise or lower chassis lift using UP/DOWN keys.

If an error is made while entering the security code you can start over by pressing the "A" and "B" key simultaneously. This erases all prior keystrokes. Pressing these two keys together also disables the control. This would be handy if you want to disable the control without waiting for the time out.

2) <u>Customizing the Security Code:</u>

The user can change the security code by first pressing the "A" and "B" keys simultaneously (to disable the module) and then pressing and holding the "A", "B" and "DOWN" keys simultaneously for 5 seconds. After 5 seconds the red LED will begin flashing and will continue

to flash until the keys are released. At this time a new code can be entered. Enter a series of "A" and "B" keystrokes. When finished, press the "UP" key. The red LED will then flash for several seconds to indicate that the code has been accepted.

Up to 8 keystrokes are allowed for the security code. If you try to enter more, the module will stop accepting new keystrokes after 8 have been entered. It will immediately begin flashing the red LED indicating that the code of 8 keystrokes has been accepted.

The security code feature can be defeated by going into setup as described above and then just pressing the "UP" key without entering a code. **Caution: If this is done, the module is always in the "READY" mode; there is no time out or disabling possible.**

3) <u>Time Out feature:</u>

The control will disable after a period of inactivity. The period factory preset at 90 seconds but can be changed by the user. Any use of UP/DOWN functions will reset the timer.

The user can change the period by:
   A. First pressing the "A" and "B" keys simultaneously (to disable the module).
   B. Press and hold "A", "B", "UP" and "DOWN" keys simultaneously for 5 seconds. After 5 seconds the red LED will begin flashing and will continue to flash until the keys are released.
   C. Previous time out period has now been erased and a new time period can be entered.
   D. Each time the "A" key is pressed, the time will increment by 15 seconds. Each time the "B" key is pressed the time will increment by one minute.
   E. When finished, press the "UP" key. The red LED will then flash for several seconds to indicate that the time period has been accepted.

Up to 50 minutes are allowed for the time out setting. If you try to enter more, the module will stop accepting new keystrokes after 50 minutes have been entered. It will immediately begin flashing the red LED indicating that 50 minutes has been accepted.

4) <u>Voltage Monitor feature:</u>

The control continuously monitors the supply voltage level. There are two set points that are used to compare the actual voltage to: the **operating** and the **non-operating**. When the chassis lift is not being used it is the non-operating voltage level that is used. When the chassis lift is being raised or lowered the operating voltage level is used. When the voltage drops below the set point the amber "LOW BAT" LED will begin flashing. While the LED is flashing the alarm will sound whenever the "UP" or the "DOWN" key is pressed. The lift gate can now only be used for two more lift cycles. After that the module can only raise the gate. The user should then recharge the battery.

<u>Once the module is in the low battery state it will stay there until it is reset by any one of three ways:</u>

(1) Recharge the battery; when the battery voltage reaches 14 volts, the module will reset.
(2) Remove power from the module; wait several seconds then reapply.
(3) Press and hold the "A" and "B" keys simultaneously for 13 seconds, until the light stops flashing. If the second or third method is used and the low battery condition has not been resolved, the module will go back to the low battery condition and will only allow two more lifts.

The non-operating level is set higher than the operating level. At present the nonoperating level set at 12.2 Volts and the operating level set at 8.2 Volts. These default values can easily be changed to a different voltage level.

5) <u>Special Emergency Use feature:</u>

There is an emergency mode for lowering the gate after down has been disabled by low voltage. If the "DOWN" key is pressed for 13 seconds, down will be enabled for as long as the key continues to be pressed. If the key is released, it will have to be pressed for 13 seconds again to allow the gate to be lowered.