USERS GUIDE

# LO-21S LOCK OUT RELAY

## PRODUCT DESCRIPTION

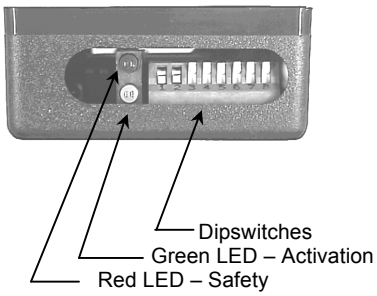
The microprocessed LO-21/S Lockout Relay (PN: 10LO21S) provides a means of interfacing the SuperScan directly with the Sentrex logic control on the Stanley Microprocessor Control Box. When the Sentrex logic control is set to stall logic, the control will not be able to determine if the detection is due to the SuperScan or the DK-12 / Bodyguard. So the LO-21/S has been designed to process the information it is given from the DK-12 / Bodyguard. The LO-21/S has two inputs and two outputs. The two inputs are for the DK-12 / Bodyguard signal and the motor signal. The outputs are for the safety relay and the activation relay. The LO21S is not intended for use with systems requiring lockout safety beams.

## TECHNICAL SPECIFICATIONS

| DESCRIPTION | SPECIFICATION |
|---|---|
| Power Supply | 12-24 Volts AC / 15-24 Volts DC |
| Operating Frequency | 4 MHz (Microprocessor) |
| Power Consumption | 10 mA at rest, 50 mA Max. |
| Output | 2 x SPST Relays |
| Max. Voltage - Relay Contact | 60V DC, 120V AC |
| Max. Current - Relay Contacts | 2A DC, 0.5A AC |

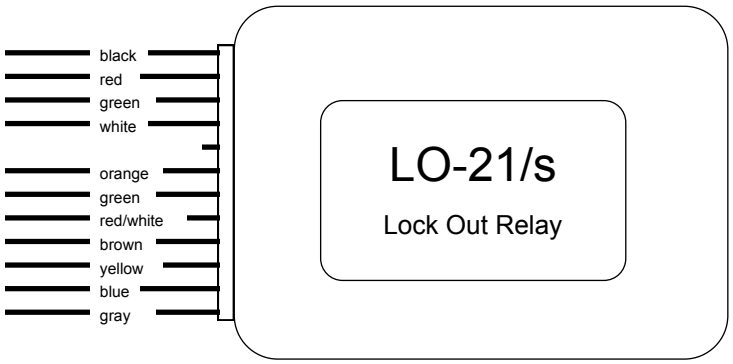


## COMPONENT ID


## SAFETY PRECAUTIONS

- Shut off all power going to the header before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions by the door.
- Always check placement of all wiring before powering up to insure that moving door parts will not catch any wires and cause damage to equipment.
- Ensure compliance with all applicable safety standards (i.e. ANSI A156.10) upon completion of installation.

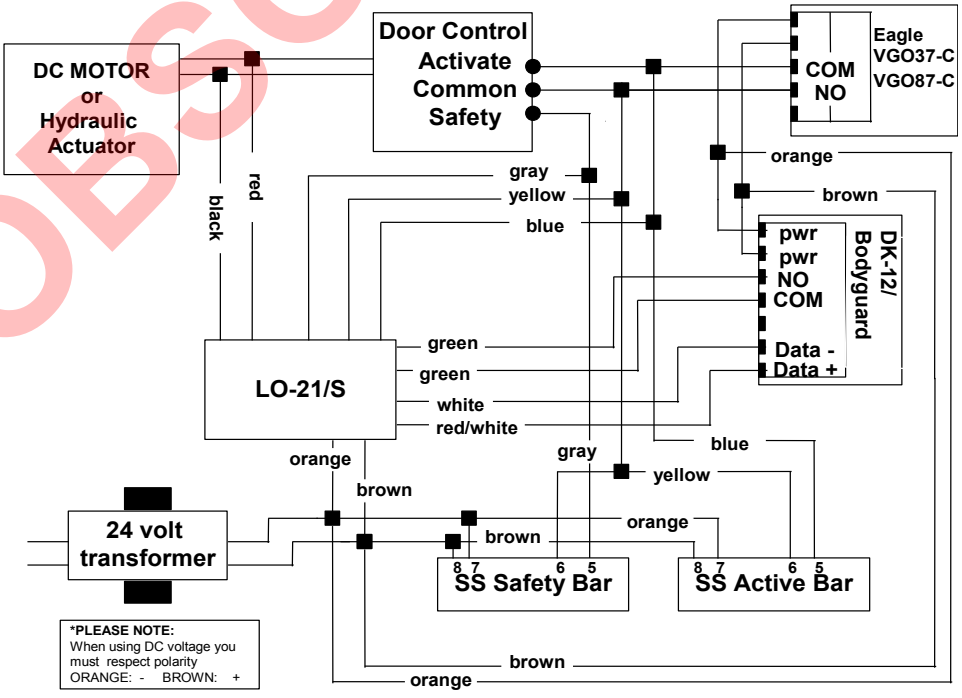



**All LO-21 wiring must be accomplished with the module unplugged. If the red / white striped and white wires (data wires) touch each other when power is applied, damage to the unit will result.**

CAUTION

| COLOR | DESCRIPTION |
|---|---|
| Orange | Power input / 12-24 VAC or 15-24 VDC |
| Brown | Power input / 12-24 VAC or 15-24 VDC |
| Red | To motor input wire. |
| Black | To motor input wire. |
| Green | To NO of DK-12 / Bodyguard |
| Green | To COM of DK-12 / Bodyguard |
| Blue | To Active terminal of control box |
| Yellow | To Common terminal of control box |
| Gray | To Safety terminal of control box |
| White | To Data (-) of DK-12 / Bodyguard |
| Red/White | To Data (+) of DK-12 / Bodyguard |





## OPERATION

**IMPORTANT NOTE:**
Dip Switch #1 on the Stanley Control Box determines either stall logic or carpet logic. Be sure to set this switch according to the door function desired. If SuperScan's are used, the switch would normally be set to Timer Logic (Dipswitch #1 OFF) to allow the door to stall upon safety side SuperScan detection. If SuperScans are NOT used, then dipswitch #1 may be in the OFF OR ON position, however if it is ON (Carpet Logic), dipswitch #3 should then also be placed to the ON position, as to prevent a 12 second hold time in the event there is an activation signal, without a safety signal to follow.

**Door Closed**
When the door is closed there will be no power on the motor leads, therefore the LO-21/S will know that the door is in the closed position and allow the DK-12 / Bodyguard to safety the door if anything interrupts its pattern. If the DK-12 / Bodyguard detects something in its pattern it will send a signal to the LO-21/S via the two green wires. Once the LO-21/S receives this signal, a relay will be activated to short the gray (safety) and yellow (common) wires, sending a safety signal to the door control to prohibit the door from opening as long as something is in the DK-12 / Bodyguard pattern. When the DK-12 / Bodyguard detects something in the door closed position the LO-21/S' RED LED will be on.

**Door Opening or Open**
When the door is opening or open the LO-21/S receives a voltage from the motor. This voltage enables the LO-21/S to use the activate circuitry to hold the door open if detection by the DK-12 / Bodyguard occurs. If the DK-12 / Bodyguard detects something, it will send the signal to the LO-21/S via the two green wires. Once the LO-21/S receives this signal a relay will be activated to short the blue (activate) and yellow (common) wires, sending an activation signal to the door to hold the door in the open position. When the DK-12 / Bodyguard detects something in the door open position the LO-21/S' GREEN LED will be on.

**Door Closing**
The DK-12 / Bodyguard will be locked out during the closing cycle of the door. If the DK-12 / Bodyguard is used, the white and red/white wires must be connected to the data terminal of the DK-12 / Bodyguard in order for the DK-12 / Bodyguard to be inhibited during the closing cycle of the door. The lockout time delay must be set by the dip switches on the LO-21/S. During this time anything detected by the DK-12 / Bodyguard will be ignored. See Set-Up for directions on setting the correct lockout time delay.



## SET-UP INSTRUCTIONS

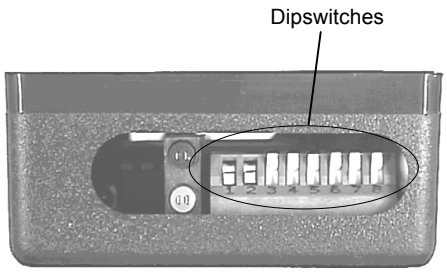
1. The only adjustment required for the LO-21S, is to configure the dipswitches to obtain the necessary lock out time delay. Maximum lockout time possible is 31 seconds. To set the dipswitches( 1 through 5) for lock out time, perform the following:

   - ❑ Activate the door to the open position.
   - ❑ Time the overall door closing cycle
   - ❑ Configure the dip switches according to the chart on Page 4 for the lock out time that is required
   - ❑ Activate the door again to the open position
   - ❑ Stand outside of the Bodyguard detection pattern, and while the door is closing, observe the red LED on the Bodyguard
   - ❑ The red LED on the Bodyguard should NOT illuminate during the closing cycle. If it does, it is probably seeing the door at the very last degree or two of door closing, which would indicate that the lock out time needs to be slightly increased.
   - ❑ Reconfigure the dipswitches to add 1 second of lock out time.
   - ❑ When the lock out time is correct. The red LED will not illuminate during the entire closing cycle of the door.
   - ❑ The last test is to insure that the Bodyguard detects an object as soon as the door has stopped closing. Simply allow the doors to begin closing, and step in behind the doors, into the Bodyguards field of detection (be sure to NOT break the path of the lockout safety beams, if so equipped). The red LED shall illuminate and remain on at the Bodyguard, and at the LO-21S, as soon as the door reaches the fully closed position, provided that an object remains in the Bodyguard's detection field.

2. If during the above test, a dual set-up of the sensor can not be achieved, it is possible that the DK-12 / Bodyguard is not receiving the proper data to switch between the door open and door closed positions.

   - ❑ If the Bodyguard learns a "door closed" position, but does not execute a learn for the "open door position", place the door to a hold open position. With a BEA remote control, unlock the Bodyguard, and with the door in the open position, press the Magic Wand key and then the number 2 – the Bodyguard should begin flashing green to signify a set-up. If it does not, this will be a quick indication that the improper data is being sent for the "open door" position. Check to insure that data exists on the data lines leading into the Bodyguard. In the full open position, voltage should be approximately 12 volts DC. If it is not, check the data lines, as well as the LO-21S to Motor wires (red & black). Refer to the Bodyguard User's Guide for further information if necessary.

## DIP SWITCH SETTINGS




Set the dipswitches according to the chart below to achieve the desired lock out time delay. The dipswitches are configured to send a binary coded input to the microprocessor to establish the correct lock out time delay.

Dip Switch 1 = 1 second
Dip Switch 2 = 2 seconds
Dip Switch 3 = 4 seconds
Dip Switch 4 = 8 seconds
Dip Switch 5 = 16 seconds
Dip Switch 6 = Not used
Dip Switch 7 = Not used
Dip Switch 8 = Not used

**For Example**:
Use the chart provided below to configure the time delay for the LO-21S. By default, the unit is set to 7 seconds. Only dipswitches 1 through 5 are used for this function.

| TIME DELAY (SEC) | DIP 1 *1 SEC* | DIP 2 *2 SEC* | DIP 3 *4 SEC* | DIP 4 *8 SEC* | DIP 5 *16 SEC* | TIME DELAY (SEC) | DIP 1 *1 SEC* | DIP 2 *2 SEC* | DIP 3 *4 SEC* | DIP 4 *8 SEC* | DIP 5 *16 SEC* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | on | off | off | off | off | **17** | on | off | off | off | on |
| **2** | off | on | off | off | off | **18** | off | on | off | off | on |
| **3** | on | on | off | off | off | **19** | on | on | off | off | on |
| **4** | off | off | on | off | off | **20** | off | off | on | off | on |
| **5** | on | off | on | off | off | **21** | on | off | on | off | on |
| **6** | off | on | on | off | off | **22** | off | on | on | off | on |
| **7** | on | on | on | off | off | **23** | on | on | on | off | on |
| **8** | off | off | off | on | off | **24** | off | off | off | on | on |
| **9** | on | off | off | on | off | **25** | on | off | off | on | on |
| **10** | off | on | off | on | off | **26** | off | on | off | on | on |
| **11** | on | on | off | on | off | **27** | on | on | off | on | on |
| **12** | off | off | on | on | off | **28** | off | off | on | on | on |
| **13** | on | off | on | on | off | **29** | on | off | on | on | on |
| **14** | off | on | on | on | off | **30** | off | on | on | on | on |
| **15** | on | on | on | on | off | **31** | on | on | on | on | on |
| **16** | off | off | off | off | on | | | | | | |



NOTE: It is important to note that the time delay will also begin counting down if a door with a DC unit is pushed open manually. This means that the door would open upon activation even if someone were to step into the detection field of the DK-12 / Bodyguard.

## COMPANY CONTACT

If after troubleshooting a problem, a satisfactory solution cannot be achieved, please call B.E.A., Inc. for further assistance during Eastern Standard Time at **1-800-523-2462 from 7am - 5pm.**
**For after-hours, call East Coast: 1-866-836-1863 or 1-800-407-4545 / Mid-West: 1-888-308-8843 / West Coast: 1-909-596-3011. DO NOT** leave any problem unresolved. If you must wait for the following workday to call B.E.A., leave the door inoperable until satisfactory repairs can be made.
**NEVER** sacrifice the safe operation of the automatic door or gate for an incomplete solution.