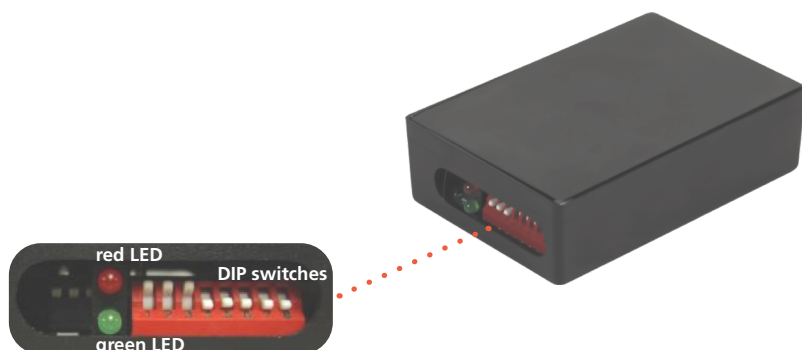


LO21P

Lock-out relay



Visit website for
available languages of
this document.



TECHNICAL SPECIFICATIONS

Power Supply	12 – 24 VAC/VDC
Operating Frequency	4 MHz (microprocessor)
Power Consumption	10 mA at rest, 50 mA Max.
Output	SPST Relay
Max. Voltage - Relay Contact	60V DC, 120 VAC
Max. Current - Relay Contacts	2A DC, 0.5A AC

*Specifications are subject to change without prior notice.
All values measured in specific conditions.*

PRECAUTIONS



- ☐ Shut off all power going to header before attempting any wiring procedures.
- ☐ Maintain a clean and 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 ensure 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.
- ☐ DO NOT attempt any internal repair of the components. All repairs and/or component replacements must be performed by BEA, Inc. Unauthorized disassembly or repair:
 1. May jeopardize personal safety and may expose one to the risk of electrical shock.
 2. May adversely affect the safe and reliable performance of the product resulting in a voided warranty.

BEA, INC. INSTALLATION/SERVICE COMPLIANCE EXPECTATIONS

BEA, Inc., the sensor manufacturer, cannot be held responsible for incorrect installations or incorrect adjustments of the sensor/device; therefore, BEA, Inc. does not guarantee any use of the sensor/device outside of its intended purpose.

BEA, Inc. strongly recommends that installation and service technicians be AAADM-certified for pedestrian doors, IDA-certified for doors/gates, and factory-trained for the type of door/gate system.

Installers and service personnel are responsible for executing a risk assessment following each installation/service performed, ensuring that the sensor/device system performance is compliant with local, national, and international regulations, codes, and standards.

Once installation or service work is complete, a safety inspection of the door/gate shall be performed per the door/gate manufacturer's recommendations and/or per AAADM/ANSI/DASMA guidelines (where applicable) for best industry practices. Safety inspections must be performed during each service call – examples of these safety inspections can be found on an AAADM safety information label (e.g. ANSI/DASMA 102, ANSI/DASMA 107, UL294, UL325, and International Building Code).

Verify that all appropriate industry signage, warning labels, and placards are in place.



WIRING



IMPORTANT:

Before connecting the red and black wires from BODYGUARD-T to the motor, be sure to check the polarity of the voltage with a multi-meter, to determine which wire is the positive side.

The red wire of the lockout module must always be connected to the positive side of the motor.

When a positive reading is observed on the meter, (while the door is in hold open) the red probe indicates the positive side. Thus, the red wire of the lockout will always be attached to whichever wire the red probe was on when a positive reading was obtained.



General Wiring Notes

- For pairs of doors, wire additional SUPERSKAN-Ts the same as in the following diagrams.
- For the inhibit function, operator mounted auxiliary switches may be used – dry contacts only.
- BODYGUARD-T is defaulted with Relay Output at 1 - must be programmed to a relay output value of 2.

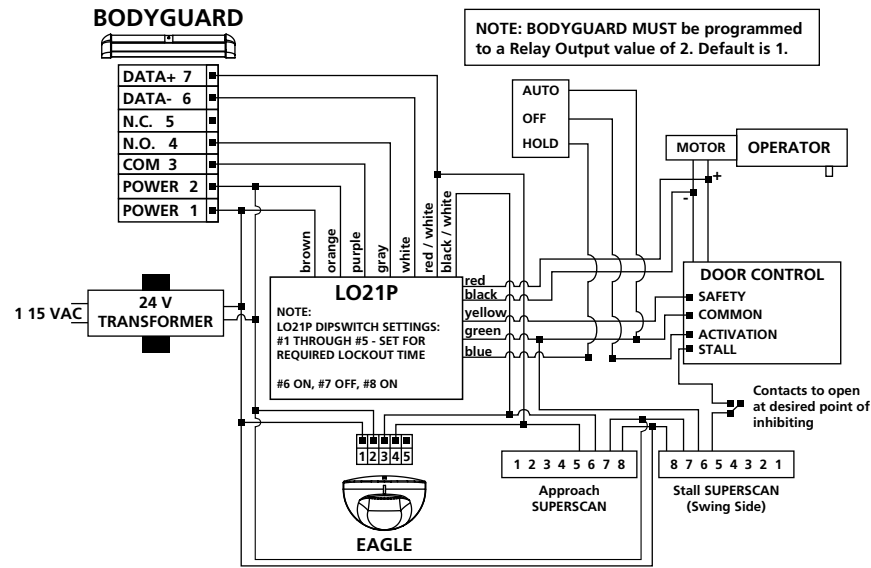
COLOR	CONNECTION	COLOR	CONNECTION
Black	Motor input -	Purple	BODYGUARD-T COM pin 3
Red	Motor input +	Gray	BODYGUARD-T N.O. pin 4
Orange	Power input / 12 – 24 VAC/VDC (-)	Black / White	Activation sensor COM
Brown	Power input / 12 – 24 VAC/VDC (+)	Green	Door control COM
White	BODYGUARD-T data (-) pin 6	Blue	Door control ACT
Red / White	BODYGUARD-T data (+) pin 7 and activation sensor N.O.	Yellow	Door control SAF



All LO21 wiring must be accomplished with the module unplugged. If the red/white wire and white wire (data wires) make contact when power is applied, damage to the unit will result.

WIRING

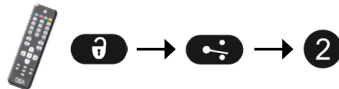
May be used on most models of operators.



Scan QR code for additional LO21P wiring diagrams.
Use the table below to easily search for your desired wiring diagram.

80.0185	BESAM 300/400 (ETIK2) WITH LO21P PARALLAX II SYSTEM Q-DISCONNECT ON APPROACH SIDE
80.0186	BESAM 300/400 (ETIK2) WITH LO21P PARALLAX II SYSTEM Q-DISCONNECT ON SAFETY SIDE
80.0187	STANLEY MP CONTROL WITH LO21P PARALLAX II SYSTEM Q-DISCONNECT ON APPROACH SIDE
80.0188	STANLEY MP CONTROL WITH LO21P PARALLAX II SYSTEM Q-DISCONNECT ON SAFETY SIDE
80.0193	BESAM CUP VER. 6.3, 6.4 CONTROL WITH LO21P PARALLAX II SYSTEM Q-DISCONNECT ON APPROACH SIDE
80.0194	BESAM CUP VER. 6.3, 6.4 CONTROL WITH LO21P PARALLAX II SYSTEM Q-DISCONNECT ON SAFETY SIDE

SETUP

1. Ensure that the On / Off / Hold Open switch is in the ON position and that the door control is powered and operating normally.
2. Power the BODYGUARD-T and, using the Universal Remote Control, unlock the sensor and change the Output Configuration to a value of 2. If necessary, refer to the BODYGUARD-T User's Guide for programming instructions.
 
3. Power the LO21P on with 12 – 24 VAC/VDC, and ensure all sensors or other devices in the application are properly powered.
4. Observe the green LED on the BODYGUARD-T upon powering. With the door in the closed position, the green LED should begin flashing, then stop flashing after approximately 5 seconds to indicate a successful setup for the "door closed" position.
5. Activate the door to the open position. The BODYGUARD-T should begin flashing green, then stop flashing after approximately 5 seconds to indicate a successful setup for the "door open" position.

If the door goes into safety swing as soon as it starts to close and you have a time delay set for the length of the closing cycle, reverse the black and red wires to the motor input for DC units.

Correct any faults before proceeding.



If the BODYGUARD-T learns a "door closed" position, but does not execute a setup for the "door open" position, place the door in a "hold open" position. With the Universal Remote Control, unlock the BODYGUARD-T and (with the door in the open position) press the Magic Wand key and then 2.

The BODYGUARD-T should begin flashing green to signify a setup. If it does not, this means that improper data is being sent for the "door open" position.

Check to ensure that data exists on the data lines leading into the BODYGUARD-T. In the "full open" position, voltage should be approximately 9 – 12 VDC. If it is not, check the data lines (white wire on terminal 6 and red/white wire on terminal 7) for correct voltage (see chart).

DOOR CLOSED	DOOR OPEN	DOOR CLOSING
0 VDC	9 – 12 VDC	8 VDC

To perform a quick test by remote control to check motor wire polarity, perform the following:

1. Place the On / Off / Hold Open switch in the ON or AUTO position.
2. Activate the door and immediately walk into the BODYGUARD-T detection zone while door is open. The door hold open at this point. Make sure there is no EAGLE activation during this time.
3. Unlock the BODYGUARD-T and press Magic Wand and 2. The green LED will begin flashing. If the door closes while flashing green, check for correct polarity at the red and black wire from lockout.

SETUP

6. Once the BODYGUARD-T has learned the “door open” and “door closed” door positions, observe the green and red LEDs on the LO21P. Walk in and out of the BODYGUARD-T detection zone while the door is open, and then again when it is closed. Observe the LED indications:
- | | |
|-----------|---|
| green LED | <ul style="list-style-type: none">• Detection at the BODYGUARD-T while the door is in the <u>open</u> position• EAGLE has been triggered• On / Off / Hold Open switch is placed in the Hold Open position <p><i>If someone steps into the BODYGUARD-T detection zone when the door is open, the LO21P's green LED will illuminate to indicate that the BODYGUARD-T will be connected to the activation circuitry of the door, thus holding the door open as long as there is detection.</i></p> |
| red LED | <ul style="list-style-type: none">• Detection at the BODYGUARD-T while the door is in the <u>closed</u> position• EAGLE has been triggered• On / Off / Hold Open switch has been activated <p><i>When the door is closed, and someone steps into the detection zone of the BODYGUARD-T, the 8310-899's red LED will illuminate, indicating that it will ignore any activation signal it receives. Therefore, the door will remain closed until the BODYGUARD-T detection zone is clear.</i></p> <p><i>Once the BODYGUARD-T zone is clear and the door has been activated, it will open and remain open for the hold time set by the motion sensor and/or door control, and will also hold open during detection at BODYGUARD-T.</i></p> |
7. Adjust the DIP switch configuration for the correct lock-out time delay:
- Activate the door to the “open” position.
 - Time the overall door-closing cycle.
 - Refer to the DIP switch configuration chart on the next page to set the desired lock-out time.
 - Activate the door again to the “open” position.
 - From outside of the BODYGUARD-T detection zone, observe the red LED on the BODYGUARD-T while the door is closing.

If the red LED on the BODYGUARD-T is illuminated during the closing cycle, it is probably detecting 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.

To resolve, reconfigure the DIP switches 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.
8. Ensure that the BODYGUARD-T detects an object as soon as the door has stopped closing:
- Allow the door to begin closing, and step in behind the doors into the BODYGUARD-T's detection zone.
 - The BODYGUARD-T's and LO21P's red LEDs should illuminate and remain on as soon as the door reaches the “fully closed” position, provided that an object remains in the BODYGUARD-T's detection zone.
9. Set the DIP switches according to the chart below to achieve the desired lock-out time.
- The total lock-out time is the sum total of the DIP switches that are in the ON position. For easy reference, use the timetables below.
- Default time is 7 seconds (times are approximate).

SETUP: DIP SWITCH CONFIGURATIONS

TIME DELAY

TIME DELAY	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
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF
13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON
23	ON	ON	ON	OFF	ON
24	OFF	OFF	OFF	ON	ON
25	ON	OFF	OFF	ON	ON
26	OFF	ON	OFF	ON	ON
27	ON	ON	OFF	ON	ON
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON

shaded = default

SETUP: DIP SWITCH CONFIGURATIONS

WIRING PERFORMANCE

DIP 6

ON	LO21P expects incoming voltage at the red and black wires while the door is in the <u>"open"</u> position. <i>Typical for DC motors.</i>
OFF	LO21P expects incoming voltage at the red and black wires while the door is in the <u>"closed"</u> position.

DIP 7

DIP 8

OFF	ON	LO21P <u>closes</u> safety circuit (yellow wire) upon BODYGUARD-T detection during "door closed".
ON	OFF	LO21P <u>opens</u> safety circuit (yellow wire) upon BODYGUARD-T detection during "door closed".

OPERATOR	DIP 6	DIP 7	DIP 8
BESAM SWINGMASTER (ETIK)	ON	OFF	ON
BESAM SWINGMASTER MP (CUP)	OFF	OFF	ON
BESAM ELECTRA 150	ON	OFF	ON
BESAM POWERSWING	ON	ON	OFF
DOR-O-MATIC ASTRO-SWING, MID-SWING, SENIOR SWING	ON	OFF	ON
GYRO-TECH (except GEMINI 710, U11)	ON	OFF	ON
HORTON 4000	ON	OFF	ON
HORTON 7000	ON	OFF	ON
KM 2000	ON	OFF	ON
STANLEY MAGIC SWING, MAGIC FORCE (with safety)	ON	OFF	ON

Door will not open All LO21P LEDs are off	Faulty door control	1. Ensure input power (orange and brown wires) is good at LO21P: 12 – 24 VAC/VDC.
	Faulty LO21P	2. Go directly to door control and jumper COM and ACT input. If door opens, proceed to next step. If not, replace/repair faulty door control.
	Faulty On / Off / Hold Open switch	3. Go to LO21P and jumper the red/white wire to the black/white wire. The green LED on LO21P should come on and the door should open. If not, replace LO21P. If LED comes on, but door does not open, ensure that the blue and green wires are properly connected to the door control.
	Faulty EAGLE	4. Ensure that the On / Off / Hold Open switch is functioning properly.
	Faulty wiring	5. Verify EAGLE proper operation. Jumper COM and N.O. terminals while wires are attached. If door does not open, check wiring between EAGLE and LO21P.
Door will not open Red LED on at LO21P	BODYGUARD-T in detection	1. Launch a setup on BODYGUARD-T.
	BODYGUARD-T improperly programmed	2. Ensure BODYGUARD-Trelay output is programmed to a value of 2 (default is 1).
	Faulty wiring between BODYGUARD-T and LO21P	3. Verify no breaks in wiring. When BODYGUARD-T is in detection, an open circuit occurs at the purple and gray wires on the LO21P. If there is any break in wiring between purple and gray and the LO21P, the LO21P will react the same as if the BODYGUARD-T were in detection.
Door will not close	On / Off / Hold Open switch is in "hold open" position	Place switch in On or Auto position.
	BODYGUARD-T is in detection	Launch a setup at BODYGUARD-T.
	Faulty door control	Remove wire from COM and ACT terminal at door control. If door does not close, replace or repair the faulty control.
Bodyguard keeps re-learning with each door position	Incorrect data polarity at BODYGUARD-T	Ensure that the white wire goes to terminal 6 of BODYGUARD-T, and the red/white wire goes to terminal 7 of BODYGUARD-T.
	Insufficient voltage switching at red and black wire of LO21P	When door is closed, there should be 0 volts observed on the red and black wires of LO21P. When the door is open, voltage should be greater than approximately 9 volts. If voltage is not high enough at red and black wires when the door is open, the LO21P will not be able to send the correct data to BODYGUARD-T. Polarity must also be correct. The red wire must ALWAYS connect to the positive wire of the motor, as observed during door open position. See important note in Wiring Connections (page 2).
As the door is closing, the BODYGUARD-T seems to reactivate the door to the open position as it is seeing the door closing	DIP switch 6 at LO21P is set incorrectly	Switch the position of DIP switch 6 and re-test the door



Can't find your answer? Visit www.BEAensors.com or scan QR code for Frequently Asked Questions!