LiftMaster®

MICROWAVE MOTION SENSOR for Commercial Doors

MODEL 50-HERK2

INTRODUCTION

The 50-HERK2 is an advanced planar microwave motion sensor designed for commercial doors and gates. The sensor can differentiate between people and vehicles. Its two relay outputs can be programmed independently for a multitude of applications. Additional features include cross-traffic optimization and slow-motion detection.

CARTON INVENTORY

- 50-HERK2 sensor with pre-wired 23' (7 m) 6-wire cable
- Self-adhesive mounting template
- Instructions

TOOLS AND HARDWARE NEEDED

- Ladder
- Tape measure
- Level
- Drill with 3/16" or 5 mm bit
- 3/16" or 5 mm mounting screws (2)
- Screwdriver
- 4 AWG (5 mm diameter) wire stripper for cable sleeve
- 24 AWG (0.5 mm diameter) wire stripper for single wires

Other items recommended for installation:

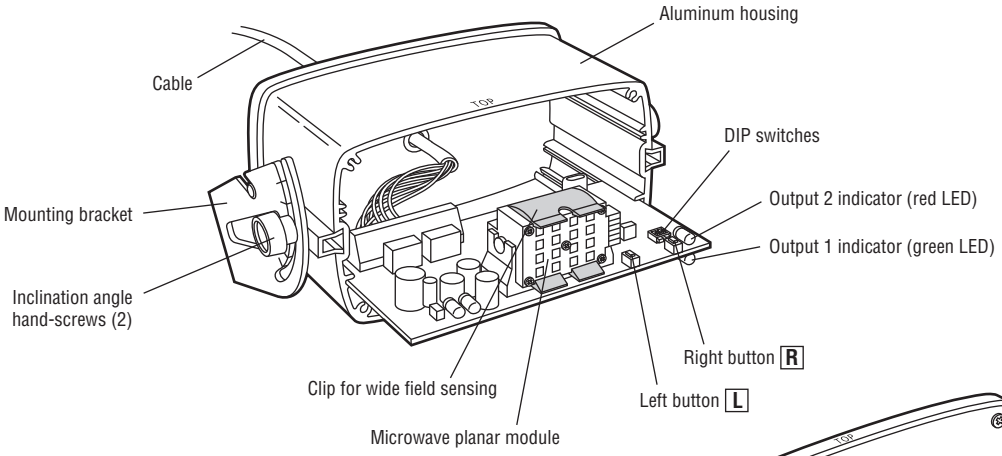
- Remote control (Model 50-HERK-RC2)

⚠⚠ WARNING

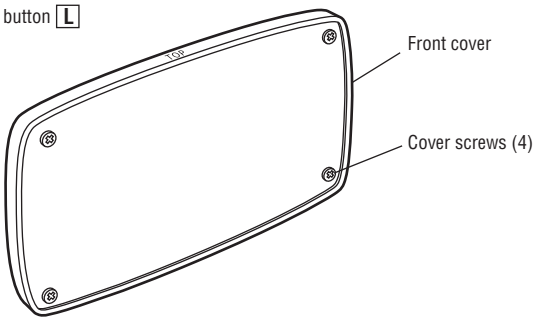
Failure to follow these safety precautions may cause DAMAGE to sensor or objects, SERIOUS PERSONAL INJURY, or DEATH.

- This product is designed to be mounted above an overhead commercial door.
- DO NOT use this product other than for its specified application.
- Observe ALL applicable local, national, and international door safety standards, codes, and laws.
- ONLY trained and qualified personnel may install and initialize the sensor.
- ONLY authorized factory personnel may perform hardware/software changes or repairs to the product.
- The sensor should ONLY be operated from a safety extra low voltage (SELV) system with safe electrical separation.
- ALWAYS consider the safety functions of your applications as a whole, NEVER just in relation to one individual section of the system.
- The installer is responsible for testing the system to ensure it meets ALL applicable safety standards (e.g. UL 325).
- NEVER touch ANY electronic components or lenses.
- After accessing the inside of the sensor, ensure the cover/ protection seal is closed tightly to achieve designated protection rating.
- ENSURE the commercial door operator has ALL of its monitored entrapment protection devices installed and operational. This sensor does NOT replace any entrapment protection devices.

OVERVIEW



50-HERK-RC2 remote control (not provided)
Required to access complete set of functions for remote setup and operation



SPECIFICATIONS

Technology . . . . . .Doppler radar with planar module: 24.05 - 24.25 GHz, <20 dBm

Detection Speed . . . . . .16 mph (25 km/h) maximum for vehicles

Outputs . . . . . .2 Relays NO(NC): 48 Vac/dc, 0.5 A (55VA/24W)

Mounting Height . . . . . .6' 6" to 23' (2 to 7 m)

Operating Voltage . . . . . .10 - 28 Vac (45 - 65 Hz) 12 - 36 Vdc

Operating current . . . . . .Max. 75 mA

Protection class . . . . . .NEMA 4 (IP65)

Temperature range . . . . . .-22° to 140° F (-30° to 60° C) - 0% to 95% relative humidity, no condensation

Housing material . . . . . .Aluminum housing, polycarbonate cover

Dimensions with mounting bracket . . . . . .Max. L x W x D = 6 3/4" x 4 3/8" x 4 3/4" (170 x 110 x 120 mm) see mounting template for more information

Weight . . . . . .1.8 lb (820 g) including cable

INSTALLATION

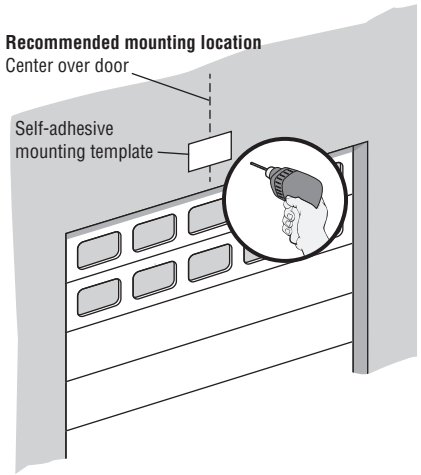
1. Choose a location for sensor:
   - Ensure sensor is firmly mounted on a flat surface. Avoid vibrations.
   - Objects such as fans, plants, flags, etc must not protrude into the detection area.
   - Make sure sensor has an unobstructed view. Obstruction can effect performance of sensor.
   - Mount sensor away from fluorescent or HID light sources.

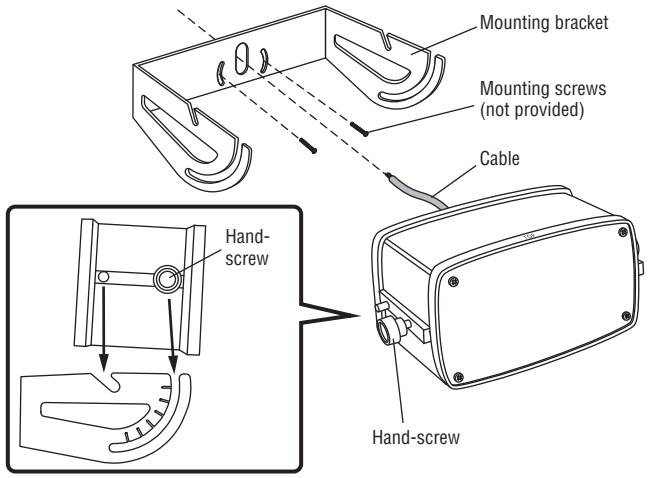
   Recommended Mounting Heights (Factory default is setting 4):

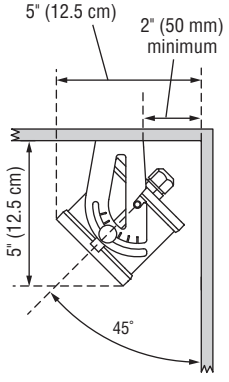
   Setting 1 = 6.5' (2 m) - 8' (2.5 m)
   Setting 2 = 8' (2.5 m) - 10' (3 m)
   Setting 3 = 10' (3 m) - 13' (4 m)
   Setting 4 = 13' (4 m) - 16.5' (5 m)
   Setting 5 = 16.5' (5 m) - 19.5' (6 m)
   Setting 6 = 19.5' (6 m) - 23' (7 m)
2. Remove the sensor from mounting bracket by loosening the hand-screws.
3. Affix the self-adhesive mounting template to the wall or ceiling and drill 3/16" or 5 mm holes in specified locations. Remove the template.
4. Route the cable through the opening in the mounting bracket and ensure cable length is sufficient to accommodate desired inclination angle.
5. Secure the mounting bracket to the wall or ceiling using screws.
6. Attach sensor to mounting bracket as shown. Tighten hand-screws to secure.

⚠⚠ WARNING

- Follow ALL steps outlined in this manual in order for proper installation of the product.
- Stop ALL traffic through the door BEFORE installing sensor.
- Ensure there is no vehicle or pedestrian traffic through the door until sensor is installed and tested for compliance with ALL applicable safety standards (e.g. UL 325).
- Verify proper installation of door equipment BEFORE installing sensor.
- Shut off ALL power BEFORE attempting ANY wiring procedures.
- ALWAYS use wire terminals to terminate stranded wire ends.
- Check placement of wiring to ensure moving parts are NOT impeded by wires.
- Make sure wiring is correct BEFORE applying power to the sensor to avoid DAMAGE to equipment.
- Ensure door and header, including housing components, are properly grounded to protective earth (PE).
- Ensure (e.g. by walk testing) that installation is in compliance with ALL applicable standards (e.g. UL 325) after completion of installation.
- If the sensor sustains damages (e.g falls), replace it with a new sensor.
- If a satisfactory solution cannot be achieved after troubleshooting, please contact tech support at 800-528-2806.





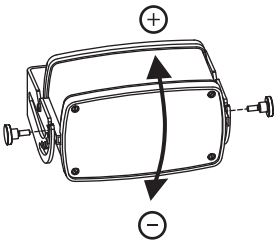


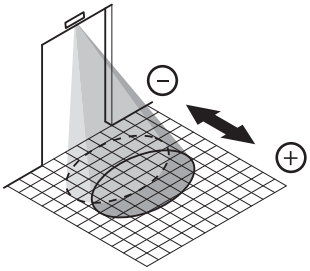
OPTIONAL CEILING INSTALLATION

ADJUSTMENT

INCLINATION ANGLE

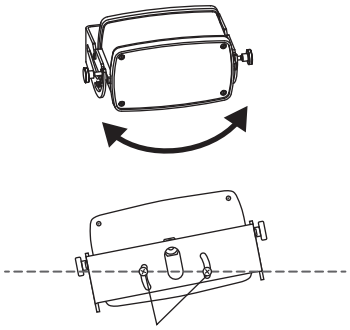
After installation, adjust the inclination angle to the desired detection pattern. Adjust the inclination angle by loosening the hand-screws on the sides of the sensor and adjusting as shown below. Range is 0-90°, in 15° increments as marked on the mounting bracket. 30-45° is typical for most applications.

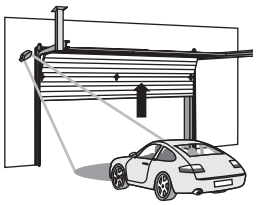




TILT ANGLE

It may be necessary to tilt the sensor for certain applications (not recommended unless warranted by special circumstances). Loosen the hand-screws and remove the sensor from the bracket. Loosen the mounting screws and twist the bracket to change the tilt of the sensor. Reattach the sensor to the mounting bracket.



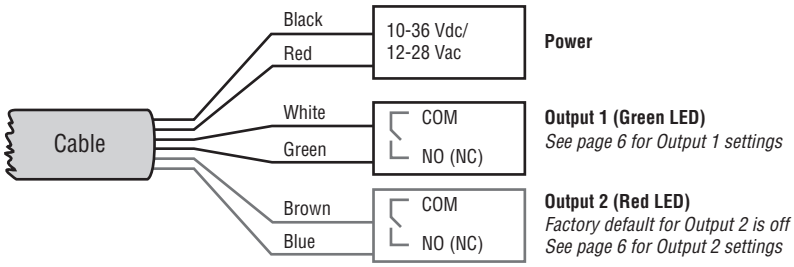


Example of application requiring tilt adjustment

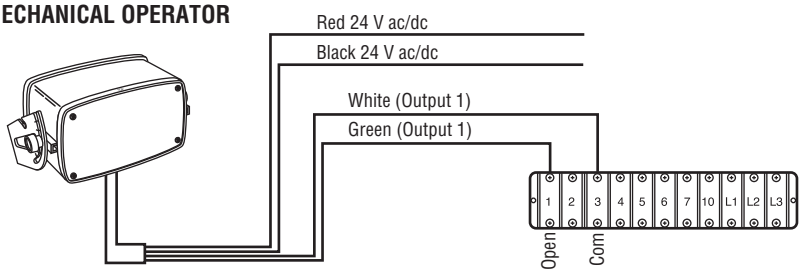
WIRING

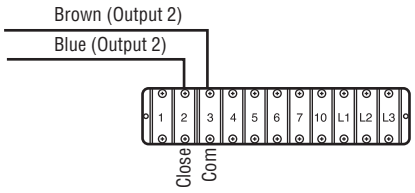
Wire the sensor to the door operator as shown below.

When power has been connected to the sensor, the green and red LEDs will blink slowly. Then the green LED will continue to blink quickly.



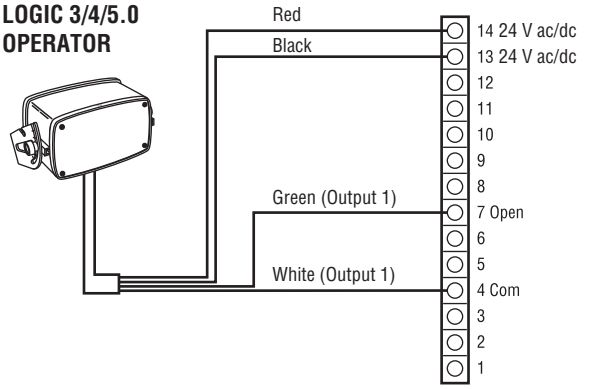
MECHANICAL OPERATOR



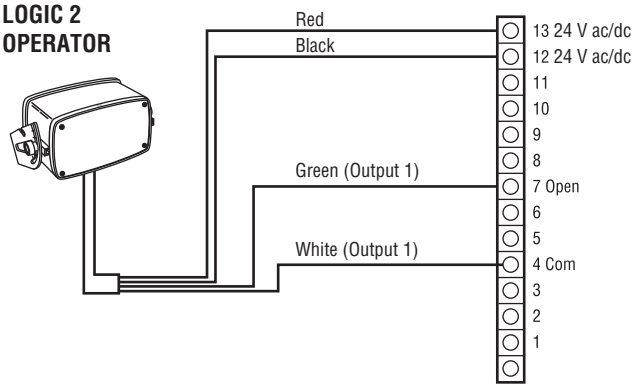


OPTIONAL

LOGIC 3/4/5.0 OPERATOR



LOGIC 2 OPERATOR

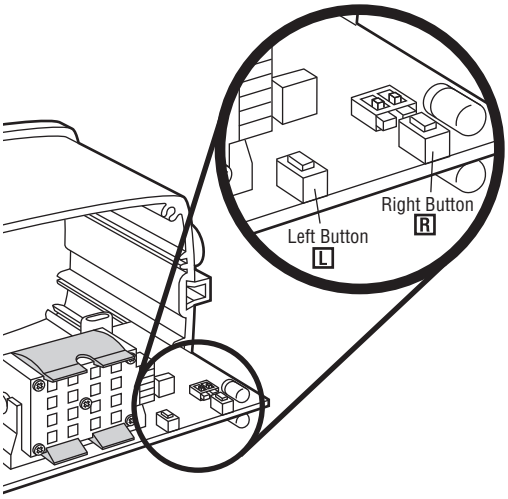


PROGRAMMING - WITHOUT REMOTE CONTROL

SENSOR FUNCTIONS

Several crucial functions can be programmed with the buttons on the sensor. All remaining functions must be configured by the 50-HERK-RC2 remote control (not provided).

1. Remove the screws from the front cover and remove the front cover to locate the LEFT [L] and RIGHT [R] buttons.
2. Briefly press the [L] and [R] buttons simultaneously to enter programming mode.
3. Press the [L] button to cycle through the **FUNCTIONS** (below). The function increases by one for every button press. The red LED will flash the number of the activated function.
4. Press the [R] button to cycle through the **VALUES** (below). The value increases by one for every button press. The green LED will flash the number of the activated value.
5. Briefly press the [L] and [R] buttons simultaneously to exit programming mode or wait 25 seconds and the sensor will exit automatically.
6. Reattach the cover.

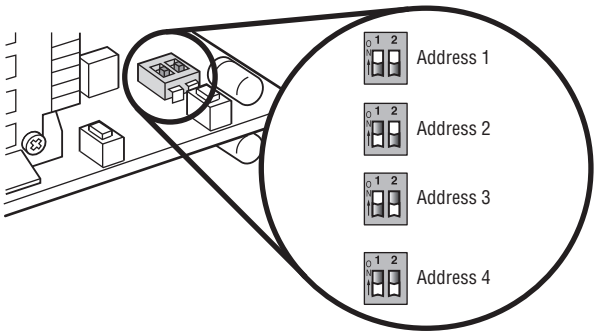


SENSOR FUNCTION	***FUNCTIONS*** *(LEFT BUTTON, RED LED)*	***VALUES*** *(RIGHT BUTTON, GREEN LED)*	***DESCRIPTION***	
Mounting Height	**1**	***1***	6' 6"-8' (2-2.5 m)	Ensure proper mounting height is specified for optimum sensor performance. For people/vehicle separation use mounting height of 10' (3 m) and up. For wide field use mounting height under 13' (4 m). After mounting height is set, most typical applications require no further programming. ** Factory default*
		2	8'-10' (2.5-3 m)	
		3	10'-13' (3-4 m)	
		4*	**13'-16' 6" (4-5 m)**	
		5	16' 6"-19' 6" (5-6 m)	
		6	19' 6"-23' (6-7 m)	
In/Out (Output 1) White and green wires	**2**	***1****	**Vehicles forward**	Only Output 1 can be programmed with the [L] and [R] buttons. Output 2 must be programmed with the remote control. See page 5. ** Output 1 factory default*
		2	Vehicles backward	
		3	Vehicles both directions	
		4	People forward	
		5	People backward	
		6	People both directions	
		7	People and vehicles forward	
		8	People and vehicles backward	
		9	People and vehicles both directions	
Field Size/ Sensitivity	**3**	***1***	X-Small field/least sensitive	** Output 1 factory default*
		2	Small field/less sensitive	
		3	Medium field/normal sensitivity	
		4*	**Large field/very sensitive**	
		5	X-Large field/most sensitive	
Wide Field Setting	**4**	***1****	**Off**	To use wide field sensing, install the clip on the front of the microwave planar module. See page 5 for instructions. ** Factory default*
		2	ON	

ADDRESSES

Addresses allow you to easily determine which sensor the remote control is communicating with. The 50-HERK-RC2 can program up to 7 independent addresses. ***NOTE:*** *See page 7 for programing addresses by remote.*

1. Remove the screws from the front cover and remove the front cover to locate the DIP switches.
2. Set the DIP switches.
3. Replace the front cover and tighten screws.



FACTORY RESET

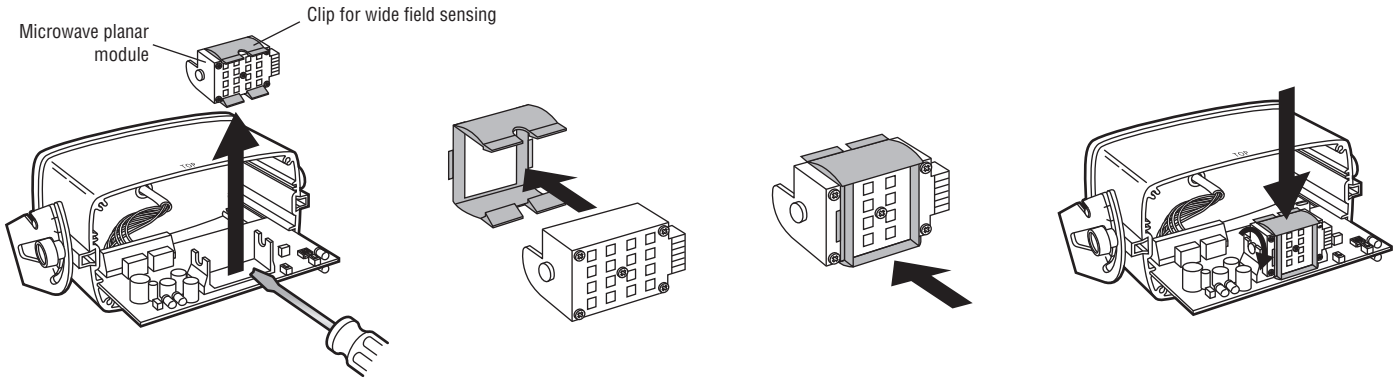
Press and hold the [L] and [R] buttons simultaneously until BOTH LEDs turn solid (about 8 seconds). All programming settings are returned to factory default.

PROGRAMMING - WITHOUT REMOTE CONTROL

WIDE FIELD SENSING

To use wide field sensing, the clip MUST be installed on the front of the microwave planar module and the wide field setting turned to ON. The sensor will not function correctly if the clip is installed and the wide field setting is set to OFF. The wide field setting is only available for mounting heights up to 13' (4 m). Wide field sensing cannot be activated if a higher mounting height is selected.

1. Remove the sensor cover.
2. Insert a screwdriver under the microwave planar module and pry upwards to loosen it from the black plastic mounting bracket.
3. Remove the module from the housing.
4. Remove the clip from the back of the module.
5. Align the clip with the front of the module and carefully slide into position.
6. Re-insert the module into the black plastic brackets until it clicks into place. Ensure both sides are fully seated.
7. Ensure the module is pointed to the lowest possible angle.
8. Follow the programming instructions to turn the wide field setting to ON, see page 4.
9. Reattach the sensor cover.



PROGRAMMING - WITH REMOTE CONTROL (NOT PROVIDED)

The 50-HERK-RC2 remote control allows the sensor to be easily and conveniently programmed from the ground. The remote control reads back the adjusted values immediately after programming and displays them on the remote control to ensure accurate programming. Flashing buttons on the remote control indicate that the data has not been fully transmitted.

REMOTE CONTROL POWER

The remote control must be powered on before use.

POWER ON: Press and hold Ⓖ for 2 seconds

POWER OFF: Press and hold Ⓖ for 2 seconds

The remote control will automatically turn off after 2 minutes if no button is pressed.

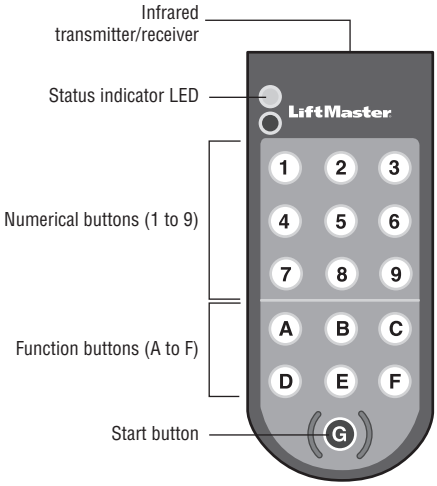
ENTER PROGRAMMING MODE

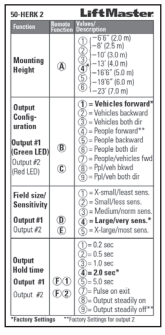
The connection between the remote control and the sensor can only be established when the sensor is in programming mode (unlocked). For safety reasons, programming mode is automatically deactivated 30 minutes after the last setting has been programmed. You can exit programming mode (lock the sensor) by pressing Ⓕ Ⓑ followed by Ⓑ.

Enter programming mode (OPTION 1):

Use this method if a 4-digit access code has previously been set. If no access code has been set, use option 2 or 3 to enter programming mode.

1. Press Ⓖ to establish connection with the sensor. The sensor address will illuminate on the keypad.
2. Press Ⓓ ⑨ and enter the previously programmed 4-digit access code, followed by Ⓓ. The sensor is now in programming mode.
   NOTE: *To set a 4-digit code see the table on page 7.*





Remote control function quick reference guide (stored in slot on battery compartment cover)

PROGRAMMING - WITH REMOTE CONTROL (NOT PROVIDED)

If unable to enter programming mode with the remote control or no access code is set, use one of the alternate methods:

Enter programming mode (OPTION 2):

Restart the sensor (temporarily disconnect the power supply). Programming mode is activated when the sensor is switched on.

Enter programming mode (OPTION 3):

Remove the screws from the front cover and remove the front cover. Briefly press the L or the R button to enter remote control programming mode.

PROGRAM SENSOR FUNCTIONS

While in programming mode:

1. Press Ⓖ to establish connection with the sensor.
2. Press the letter button of the function to be programmed (see chart below). EXAMPLE: Ⓐ = mounting height.
3. The current value is illuminated on the keypad. EXAMPLE: ④ =13'-16' 6" (4-5 m).
4. Press the number button of the new value. EXAMPLE: ⑥ = 19' 6"-23' (6-7 m).
5. The new value is immediately saved and displayed on the keypad.

Programming of this function is now complete. Repeat for other functions if necessary.

NOTE: *If the buttons on the remote control are flashing, the data has not been fully transmitted. Repeat the programming steps.*

SENSOR FUNCTION	*REMOTE CONTROL FUNCTION*	*VALUES*	*DESCRIPTION*	
Mounting Height	**A**	***1***	6' 6"-8' (2-2.5 m)	Ensure proper mounting height is specified for optimum sensor performance. For people/vehicle separation use mounting height of 10' (3 m) and up. For wide field use mounting height under 13' (4 m). After mounting height is set, most typical applications require no further programming. ** Factory default*
		2	8'-10' (2.5-3 m)	
		3	10'-13' (3-4 m)	
		4*	**13'-16' 6" (4-5 m)**	
		5	16' 6"-19' 6" (5-6 m)	
		6	19' 6"-23' (6-7 m)	
In/Out	**B (Output 1)** White and green wires **C (Output 2)** Brown and blue wires	***1****	**Vehicles forward**	Factory default for Output 2 is off. To activate Output 2, set the hold time - press Ⓕ ② followed by ① … ⑦ (see "Hold Time" below). ** Output 1 factory default* *** Output 2 factory default*
		2	Vehicles backward	
		3	Vehicles both directions	
		4**	**People forward**	
		5	People backward	
		6	People both directions	
		7	People and vehicles forward	
		8	People and vehicles backward	
		9	People and vehicles both directions	
Field Size/ Sensitivity	**D** (Output 1) **E** (Output 2)	***1***	X-Small field/least sensitive	** Output 1 and 2 factory default*
		2	Small field/less sensitive	
		3	Medium field/normal sensitivity	
		4*	**Large field/very sensitive**	
		5	X-Large field/most sensitive	
Hold Time	**F1** (Output 1) **F2** (Output 2)	***1***	0.2 sec.	** Output 1 factory default* *** Output 2 factory default*
		2	0.5 sec.	
		3	1.0 sec.	
		4*	**2.0 sec.**	
		5	5.0 sec.	
		7	Pulse on exit	
		8	Output steadily on (for testing purposes only)	
		9**	**Output steadily off**	

PROGRAMMING - WITH REMOTE CONTROL (NOT PROVIDED)

SENSOR FUNCTION	*REMOTE CONTROL FUNCTION*	*VALUES*	*DESCRIPTION*	
Logic	**F3** (Output 1) **F4** (Output 2)	***1****	**NO (Normally Opened)**	** Output 1 and 2 factory default*
		2	NC (Normally Closed)	
Cross-Traffic Optimization (CTO)	**F5**	***1****	**OFF - Door always activates when any crossing traffic is detected.**	** Factory Default*
		2	Low - Door occasionally activates when crossing traffic is detected.	
		3	Medium - Door rarely activates when crossing traffic is detected.	
		4	High - Door ignores most crossing traffic.	
Interference Filter	**F6**	***1****	**OFF**	** Factory Default*
		2	On - Use when electromagnetic sources such as fluorescent bulbs, HID lights, wireless systems, motors/inverters are causing interference.	
Slow Motion Detection (SMD) for people only	**F7**	***1****	**OFF**	** Factory Default*
		2	ON - Holds door open as long as people are slightly moving in front of the door (LED will blink).	
Remote control communication address	**F8**	***5-7****	Available addresses that can be set by remote control.	To set address 1-4 with DIP switches see page 4. ** Factory Default is 7*
		9	Reads and sets address (1-4) set by DIP switch on the sensor. Once address is changed, press Ⓖ to re-establish connection with sensor.	
Delete Access Code **Set Access Code**	**D9**	Before setting access code, always delete the current access code. To delete access code, press Ⓓ ⑨ followed by ⑨ ⑨ ⑨ ⑨ followed by Ⓓ. To set access code, press Ⓓ ⑨ enter any 4-digit number from ① ① ① ① - ⑨ ⑨ ⑨ ⑧ followed by Ⓓ. Access code is now stored.		
Lock Sensor to Remote Control Access	**F8**	***8***	Exit programming mode (lock the sensor). Further changes cannot be made until programming mode is entered again (see page 5).	
Factory Reset	**A**	***9***	All settings listed in this table with * or ** will be restored.	

TROUBLESHOOTING

SYMPTOM	*SOLUTION*
People/vehicle separation does not work as expected	Check mounting height and setting (more than 10' [3 m] is recommended) Check mounting situation and environment (sensor centered above door is best) Check setting/clip for wide field pattern
Late detection of traffic	Increase field size/sensitivity Adjust inclination angle to move the pattern away from the door
Door reverses (sensor reacts to closing door)	Adjust inclination angle to move the pattern away from the door Reduce field size/sensitivity Make sure sensor is secure and the sensor's mounting support does not vibrate
Door opens without motion of a vehicle (or person)	Mount sensor away from EMC interference (e.g. fluorescent tubes, HID lamps, wireless system, motor/inverter, etc.) Point pattern away from EMC interference Activate interference filter
Door does not activate though sensors signals detection (LEDs)	Check wire colors against output selection
Late detection or non-detection of people	Reduce mounting height (less than 16' [5 m] is recommended)
Door stays open	Change output logic

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions: this device may not cause harmful interference, this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: reorient or relocate the receiving antenna, increase the separation between the equipment and receiver, connect the equipment into an outlet on a circuit different from that to which the receiver is connected, consult the dealer or an experienced radio/TV technician for help.

Warning: Changes or modifications to this equipment not expressly approved by LiftMaster may void the FCC authorization to operate this equipment.