MWave™

FC MODEL: MWAVE

WARNING

Read and understand all instructions before beginning installation. Disconnect power to motor and test upon completion. Motion sensors should be installed by qualified personnel to ensure the requirements herein have been met. Keep these instructions with the installation. Always abide by local and national electrical code specifications when wiring accessories to motor controls.

MWave™ is a fully customizable, hands-free radar motion sensor equipped with dual relays. The reliable dual relay design provides detection capabilities that differentiate between approaching versus cross-traffic, as well as pedestrian versus vehicular traffic.
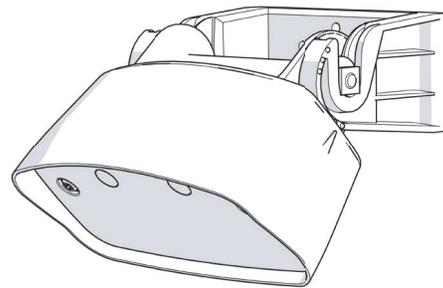

CONTENTS
- MWave, includes connection cable
- Mounting screws

SUGGESTED
- Manufacturer's door operator manual

OPTIONAL
- Remote control

I. **INSTALLING THE MOUNTING BRACKET**
- Install the mounting bracket centered, above the door in a location where the required detection area is in clear line of sight to the MWave.

II. **WALL/CEILING MOUNTING**
1. Drill the holes as per the dimension drawing (IMAGE 1)
2. Attach the mounting bracket using the screws provided

III. **SECURING THE SENSOR**
1. Loosen the long screw on the sensor. It is not necessary to remove the long screw completely
2. Insert the sensor
3. Set the swivel angle
4. Tighten the long adjustment screw
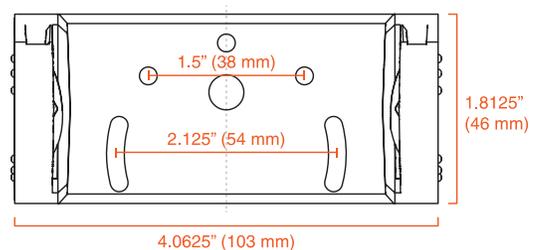5. Connect the cable to the door operator

Note: To mount the device on a ceiling, position the mounting bracket at an angle of 180°.

1.5" (38 mm)

2.125" (54 mm)

1.8125" (46 mm)

4.0625" (103 mm)

IMAGE 1

MWAVE_INST_20191015

IV. CONNECTING THE CABLE

RELAY 1: Power Supply & Vehicle-Detection				RELAY 2: Person-Detection			
RED	1	Power	(+) 12-36 V DC or	BROWN	1	Person	Relay - COM
BLACK	2	Power	(-) 12-28 V AC	BLUE	2	Person	Relay - N.O./N.C.
WHITE	3	Vehicle	Relay - COM				
GREEN	4	Vehicle	Relay - N.O./N.C.				

V. POWER UP

- Before switching on the device, remove all objects from the door area that do not normally belong there.
- After applying the operating voltage, the hardware and software is initialized. This process takes approximately 10 seconds. The LED flashes red/green. Check the settings by walk-testing the sensor.
- If adjustments are required, see **Adjustable Parameters**.
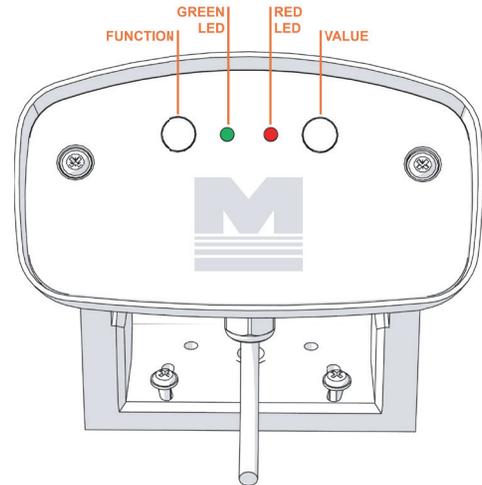- Avoid fluorescent lights in the detection field.

VI. OPERATING & DISPLAY ELEMENTS

- IMAGE 2:
  - FUNCTION control button
  - Green status indicator LED
  - Red status indicator LED
  - VALUE control button

IMAGE 2

VII. DETECTION FIELD SETTINGS: SWIVEL ANGLE

1. Snap-in positions are provided every 15 degrees to allow the sensor to be swiveled, depending on requirements (IMAGE 3).
2. To adjust the swivel angle, loosen the long adjustment screw, move the sensor into the required position (the sensor will snap into place) and tighten the long screw again.
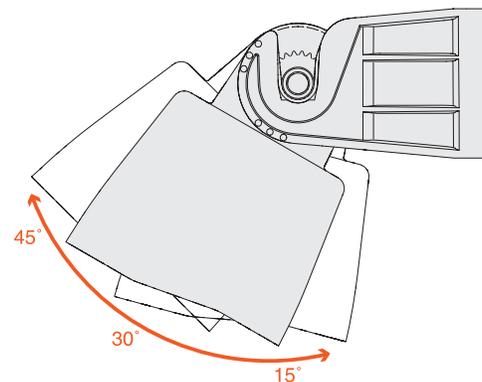
VIII. OPERATION

- **Vehicle Detection**
  - The sensor distinguishes between vehicles and people. This distinction is dependent on the settings of the **vehicle-detection**, **person-detection**, and **responsiveness** parameters.
- **Relay Function**
  - The **vehicle-detection relay** parameter defines which function activates the vehicle-detection relay. The vehicle detection relay is factory set to activate whenever a vehicle moves toward the sensor.
  - The **person-detection relay** parameter defines which function activates the person-detection relay. The person-detection relay is set by default to activate whenever a person moves toward the sensor.


IMAGE 3

IX. LED STATUS DISPLAY

LED	STATUS
Flashing red/green	Sensor initialization in progress
Green	Sensor ready for operation, no detection
Flashing green 3x	Command received from remote control
Flashing red rapidly	Vehicle-detection relay active
Flashing green rapidly	Person-detection relay active
Flashing red/green rapidly	Vehicle-detection relay and person-detection relay both active

X. APPLICATION EXAMPLES

EXAMPLE 1: Vehicle recognition at a door. Door control with one switching input. Output function set for **vehicle forward** vehicle-detection relay. Factory default is set to open with vehicle and person detection. (see Function 4)

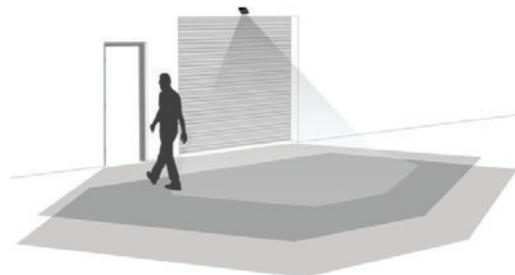**Vehicle approaches:** Vehicle-detection relay is activated. Door opens.
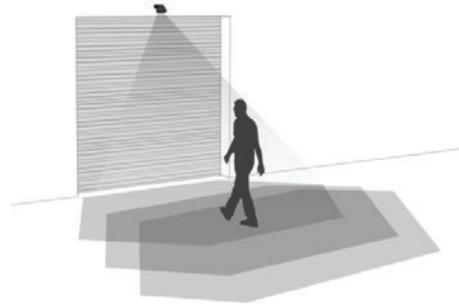
Person approaches: Vehicle-detection relay is not activated. Door remains closed.

EXAMPLE 2: Door with vehicle recognition and separate entrance for people. Door control with two switching inputs (vehicle-detection relay and person-detection relay). Output function for **vehicle forward** vehicle-detection relay. Output function for **person forward** person detection relay. (see Function 4 and 5)

Vehicle approaches: Vehicle-detection relay is activated. Door opens. Person-detection relay is not activated. Entrance for people remains locked.

Person approaches: Vehicle-detection relay is not activated. Door remains closed. Person-detection relay is activated. Entrance for people unlocks.
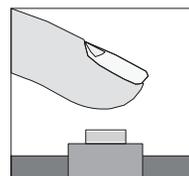
XI. SENSOR SETTINGS

Program the sensor using the **FUNCTION** and **VALUE** buttons. When one of these buttons is pressed, the flash code is interrupted. Once the final menu item has been reached, the next press of a button calls up the

first menu item again. Each time a button is pressed, the setting is automatically stored. Programming mode is exited automatically if no setting is made within ten minutes. The set values are stored.

MANUAL PROGRAMMING	
FUNCTION 2s RED GREEN	Press and hold **FUNCTION** button for approximately two seconds. Programming mode is activated. The **LEDs** indicate the settings by flashing: • Red flashing indicates the function • Green flashing indicates the setting • No flashing indicates that the function is switched off
SETTING THE FUNCTION & VALUE	
FUNCTION 1x	Press the **FUNCTION** button once. The next function is selected.
VALUE 1x	Press **VALUE** button. The value is increased by 1 each time button is pressed.
ENDING PROGRAMMING	
FUNCTION 2s	Press and hold **FUNCTION** button for approximately two seconds. Programming mode is exited. The settings are stored.

XII.   ADJUSTABLE PARAMETERS

Check the settings by walk-testing the sensor. For more information on settings, see the **Troubleshooting** section.

DESCRIPTION (FUNCTION)	ADJUSTMENT RANGE (VALUE)	FACTORY SETTING	MANUAL SETTING Device Face [Function] ● Red	[Value] ● Green	KEY MWave Remote	KEY Generic Remote
Start parameterization mode—unlock			Hold 2 seconds		🔓	🔓
Exit parameterization mode exit—lock			Hold 2 seconds		🔒 + 🔒	🔒 + 🔒
FUNCTION 1 Field size	0 = minimum sensitivity … 9 = maximum sensitivity	6	Red LED 1x	[Value] 0-9	SENS + 0-9	◢ + 0-9
FUNCTION 2 Vehicle detection	1 = low sensitivity 2 = medium sensitivity 3 = high sensitivity	2	Red LED 2x	1, 2, 3	CAR + 1, 2, 3	A🖼 + 1, 2, 3
FUNCTION 3 Human-presence detection	1 = minimum sensitivity … 7 = maximum sensitivity	1	Red LED 3x	1-7	PER + 1-7	B🖼 + 1-7
DETECTION FILTER (Rejection Mode)						

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DESCRIPTION (FUNCTION)	ADJUSTMENT RANGE (VALUE)	FACTORY SETTING	MANUAL SETTING Device Face		KEY MWave Remote	KEY Generic Remote
FUNCTION 4 Vehicle-presence relay (Relay 1)	4 = Vehicle forward 5 = Vehicle backward 6 = Vehicle forward/backward 7 = Person/vehicle forward 8 = Person/vehicle backward 9 = Person/vehicle forward/backward	7	Red LED 4x	4-9	OCAR + 4-9	C + 4-9
FUNCTION 5 Human-presence relay (Relay 2)	1 = Person forward 2 = Person backward 3 = Person forward/backward 4 = Vehicle forward 5 = Vehicle backward 6 = Vehicle forward/backward	1	Red LED 5x	1-6	OPER + 1-6	D + 1-6
FUNCTION 6 Hold time	0 = 0.5 s 1 = 1.0 s 2 = 2.0 s 3 = 3.0 s 4 = 5.0 s 5 = 10 s 6 = 20 s 7 = 30 s 8 = 60 s 9 = 300 s	1	Red LED 6x	0 = 0.5 s 1 = 1.0 s 2 = 2.0 s 3 = 3.0 s 4 = 5.0 s 5 = 10 s 6 = 20 s 7 = 30 s 8 = 60 s 9 = 300 s	TIME + 0-9	🕐 + 0-9
FUNCTION 7 Switching output	1 = Relay N.O. 2 = Relay N.C.	1	Red LED 7x	1, 2	OUT + 1, 2	⇴ + 1, 2
FUNCTION 8 Responsiveness	1 = Fast 2 = Normal 3 = Slow	2	Red LED 8x	1, 2, 3	STEP + 1, 2, 3	
Factory reset after pressing the key 9	9		Push both buttons at the same time for 5 seconds		SET + 9	🪄 + 9
Sensor operation (permanent relay circuit to support commissioning)	1 = Automatic 2 = Vehicle and passenger relay permanently detected 3 = Vehicle relay detected, person relay not detected 4 = Vehicle relay not detected, person relay detected 5 = Vehicle and person relay permanently not detected	1			F2 + 1-5	F2 + 1-5
Function value keys					0-9, + , -	0-9, + , -
Query the value of the previously pressed key					?	?
SW revision query	Red LED flashes as per main version Green LED flashes as per sub-version				F1	F1

TROUBLESHOOTING

FAULT	CORRECTIVE ACTION
Door is detected	• Adjust tilt angle • Reduce the sensitivity (see Function 1) • Increase the responsiveness value (see Function 8)
LED not lit up	• No power supply, device not functioning

Remote control does not respond	• Device is locked. Switch the operating voltage off and on again. The sensor can now be configured without a code for 30 minutes. Check the remote-control battery.
Person is mistaken for a vehicle	• Increase vehicle detection value (see Function 2) • Increase the responsiveness value (see Function 8) • If only vehicles are to be detected, reduce sensitivity (see Function 1)
Vehicle is mistaken for a person	• Lower the vehicle detection properties (see Function 2) • Increase the responsiveness value (see Function 8)
Object is detected too late	• Reduce the responsiveness value (see Function 8) • Increase the sensitivity (see Function 1)
Object detection is too sensitive	• Increase the responsiveness value (see Function 8) • Reduce the sensitivity (see Function 1)
Transverse movement of people ignored	• Increase the person-detection value (see Function 3)
False detections occurring due to interfering influences (rain, vibration, etc.)	• Increase the responsiveness value (see Function 8) • Increase the person-detection value (see Function 3) • Reduce the sensitivity (see Function 1)

XIII. TECH SUPPORT

For additional assistance, contact Miller Edge Tech Support: 800-220-3343

XIV. GENERAL SPECIFICATIONS

FUNCTIONAL

Technology	Microwave Doppler radar
Detection Mode	Radar motion sensor
Detection Speed	Min. 0.1 m/s (4" per second)
Reaction Time	<100 ms
Output	2 channel N.O./N.C. (selectable)
Output Hold Time	0.5-300 seconds (adjustable)
Temperature Range	-4° to +140°F (-20 to 60°C)
Humidity	Maximum 90% non-condensing
Operating Frequency	24,075 GHz–24,175 GHz K-Band
Degree of Protection	IP67, NEMA 6
Agency Approvals	This is compliant with Part 15 of the FCC regulations

ELECTRICAL

Switching Voltage	48 V AC/DC, 1/2 Amp
Supply Voltage	12-36 V DC, 12-28 V AC
Power Consumption	Maximum <1 W
No-Load Current	<50 mA at 24 VDC
Switching Mode	Active/passive
Signal Output	2 relay outputs, NO/NC (selectable)
Nominal Power	Max. 0.5 A AC / 1.0 A DC
Switching Current	Maximum 1 A
Switching Power	Max. 24W / 60 V A
Connection	2-pin and 4-pin plug-in screw terminals, 26 ft (8 m) connection cable
Transmitting Power	< 20 dBm

PHYSICAL

Materials	Polycarbonate housing
Color	Black

Interface	2 programming buttons: FUNCTION (left), VALUE (right)
LED Signals	Red and green LEDs
Mounting Height	Minimum: 8 ft. (2,5 m), maximum: 23 ft. (7 m)
Dimensions	With mounting bracket (180°): 5 1/8 W x 2 7/8 H x 5 3/8 D in. (131 x 73 x 136 mm)
	Without mounting bracket: 5 1/8 W x 2 7/8 H x 3 7/8 D in. (131 x 73 x 98 mm)
Weight	23 oz. (650 g)
Detection Zone	21 W x 29 D ft. (10 x 5.5 m) at installation height of 16 ft. (5 m) and inclination angle of 45°
	18 W x 32 D ft. (9 x 6.5 m) at installation height of 23 ft. (7 m) and inclination angle of 45°
Mounting Angle	-90°/+90° in 15° increments (wall or ceiling mount)

XV.   MAINTENANCE

It is strongly recommended that users check MWave at least once per month for low batteries alerts (where applicable) and damage to housings and mountings. Also check for signs of damage to cables or connection points. Refer to your operator manual for detailed instructions about motor connections.

XVI.   REPLACEMENT

To replace your Miller Edge accessories, contact your sales representative. Attempting to repair your Miller Edge accessories is not recommended and will void the manufacturer warranty.

XVII.   WARRANTY

MWave carries a **2-year warranty** from date of shipment from Miller Edge for credit or replacement. This warranty applies to normal use, which is found to have defective materials or workmanship, as determined solely by an authorized factory representative. This warranty is void where evidence of misuse or abuse is present. This warranty covers repair or replacement of the purchased product only; product installation/labor charges are not covered. Miller Edge manufactures its products to meet stringent specifications and cannot assume responsibility for those consequences arising from improper installation or misuse. Installation instructions and testing procedures provided by Miller Edge must be followed for proper operation and maintenance.

XVIII.   ACCESSORIES

Contact your Miller Edge sales representative about the optional **MWave remote control**.