HOTRON
HR-Robus
User Manual

English CE

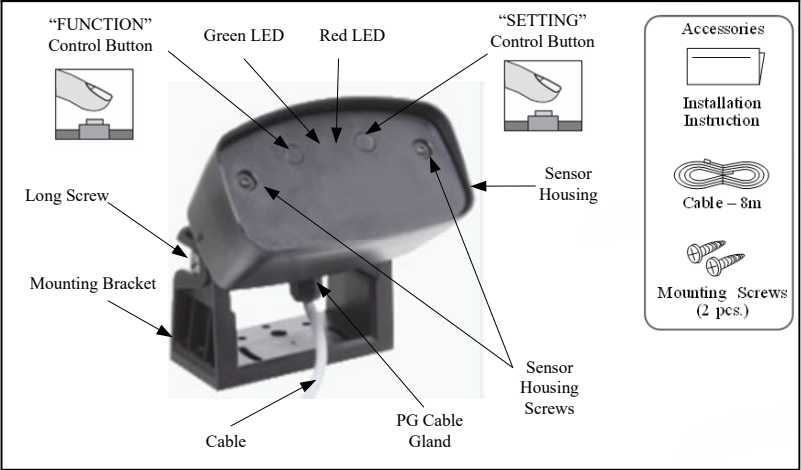⚠ **WARNING** Disregarding this symbol may result in serious injury or death.

⚠ **CAUTION** Disregarding this symbol may result in injury or damage to equipment.

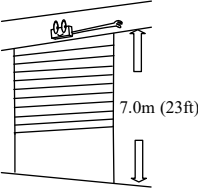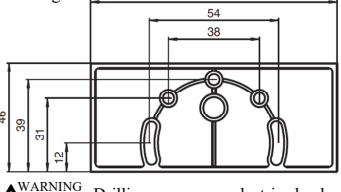**Note** Special attention is required when this symbol is shown.

The product is designed to distinguish between vehicles and people. This distinction is dependent on the settings of the "Vehicle Detection", "Human-Presence Detection" and "Responsiveness" parameters

To enter and exit programming mode, press and hold the FUNCTION button for approximately two seconds

☆ Indicates default factory settings

After changing sensor settings, confirm them by walk testing the sensor.

1. DESCRIPTION

- "FUNCTION" Control Button
- Green LED
- Red LED
- "SETTING" Control Button
- Accessories
- Installation Instruction
- Long Screw
- Sensor Housing
- Mounting Bracket
- Cable – 8m
- Sensor Housing Screws
- Mounting Screws (2 pcs.)
- Cable
- PG Cable Gland

2. TECHNICAL SPECIFICATIONS
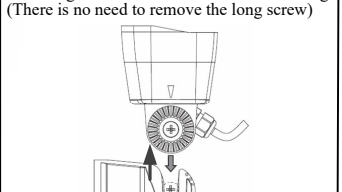
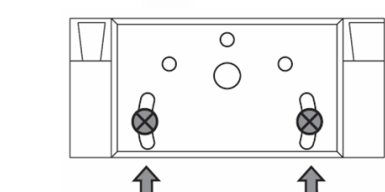|	
Model Name	HR-Robus
Detection Method	Microwave Technology
Max. Installation Height	7.0[m] (23[ft])
Supply Voltage	12-36 V [DC], 12-28V [AC]
Power Consumption	< 1W
No-load Current	< 50mA at 24V [DC]
Sensor Housing Adjustment	Up/Down: ±90° in 15° increments Right/Left: ±18°
Detection Range	7m (W) x 7m (D) at installation height of 5m and housing angle of 45°
	5m (W) x 8m (D) at installation height of 7m and housing angle of 45°
Operating Frequency	24,150 – 24,250 GHz
Relay Output	2 relay outputs, NO/NC: Voltage: Max 48 VAC/ 48 VDC
Relay Hold Time	0,5 – 300s; adjustable
Operating Temperature	-30 °C to +60 °C (-22 °F to 140 °F)
Operating humidity	Below 90%
IP Rate	IP67
Housing Material	Polycarbonate (PC)
Weight	320g (without cable), 650g (with cable)
Dimensions	With Mounting Bracket (180°) = 131mm (W) x 73mm (H) x 136mm (D)

3. MOUNTING & WIRING INFORMATION

① Mount at 7m (23ft) or lower. 7.0m (23ft)

② Drill mounting holes as per the below drawing.
103 / 54 / 38 / 46 / 39 / 31 / 12
⚠ **WARNING** Drilling may cause electric shock. Be careful of hidden wires.

③ Loosen the Long Screw and separate the Mounting Bracket from the Sensor Housing. (There is no need to remove the long screw)

④ Attach the Mounting Bracket with the Mounting Screws provided.

⑤ Re-insert the Sensor Housing into the Mounting Bracket and set the desired Sensor Housing angle, then tighten the Long Screw and connect the Cable to the door controller.
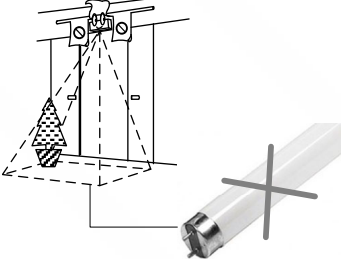
Power/Vehicle-presence Relay
- ① AC/DC supply (brown)
- ② AC/DC supply (green)
- ③ Vehicle-presence relay (white)
- ④ Vehicle-presence relay (yellow)

Human-presence Relay
- ① Human-presence relay (gray)
- ② Human-presence relay (pink)

⚠ **WARNING** Incorrect voltage may damage the sensor or cause electric shock.

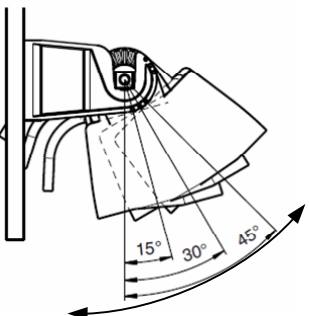⑥ Ensure there are no moving objects or fluorescent lights in the detection zone.

⑦ Apply power to the device. The sensor LED's will flash RED/GREEN for 10 seconds indicating that the hardware and software are been initialised. Once this is complete the sensor settings can be configured as required.
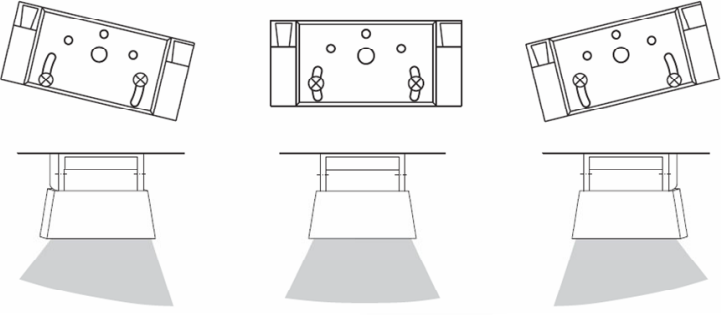
4. LED INDICATORS

Red/Green flashing	Sensor Initialisation
Green	Standby
Green flashing (Fast)	Human presence relay activated
Red flashing (Fast)	Vehicle presence relay activated
Red/Green flashing (Fast)	Vehicle presence relay and Human presence relay activated

Number of Red flashes (Slow) followed by a number of Green flashes (Slow) indicates the sensor function and the setting for that function during sensor programming using the Control Buttons on the sensor body.

5. DETECTION AREA WIDTH AND DEPTH ADJUSTMENT

① When the Long Screw is loosened, the sensor housing can be moved up/down in increments of 15° to give the desired detection area. Re-tighten the Long Screw when the desired sensor housing angle is achieved.

15° 30° 45°

② The Mounting Bracket can be installed at an incline to focus the sensor detection area to the right or left as required.

6. PROGRAMMING THE SENSOR

The HR-Robus can be programmed using the "FUNCTION" and "SETTING" control buttons on the front of the sensor.

Press and hold the "FUNCTION" button for 2s or longer to enter programming mode.

Once programming mode is entered, the number of RED LED flashes (slow) indicates the function to be set from 1-9 as shown in the table in section 8. The corresponding number of GREEN LED flashes (slow) indicates the current setting for that function.

For example one RED LED flash (slow) Indicates the Sensitivity function followed by six GREEN LED flashes (slow) to indicate a sensitivity setting value of 6 on the 1-10 scale.

Using the "FUNCTION" control button to toggle through the nine functions until you reach the one that you would like to change. Then toggle the "SETTING" control button to set your desired value for that function which will be confirmed by the number of GREEN LED flashes.

Each time the "SETTING" control button is pressed, the setting is automatically stored.

Programming mode is exited by pressing and holding the FUNCTION button for 2s.

7. PROGRAMMING EXAMPLE

Changing the Relay Hold Time from 1s to 5s.

1/ Press and hold the FUNCTION button for 2s to enter programming mode

2/ The current FUNCTION (RED LED) and SETTING (GREEN LED) will be indicated by the sequence of red and green led flashes. For example 1xRED for function followed by 8xGREEN highlights a sensitivity setting of 8.

3/ Press the FUNCTION button 5 times to toggle down to the Relay Hold Time function. The red LED should now be flashing six times with the number of green LED flashes indicating the current setting for Relay Hold time. For example two green flashes indicates a Relay Hold Time setting of 1s.

4/ To change the Relay Hold Time from 1s to 5s press the SETTING button four times.

5/ Six RED LED flashes followed by six GREEN LED flashes will now indicate that the Relay Hold Time is set to 5s

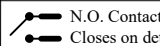6/ Press and hold the FUNCTION button for two seconds to exit programming mode and to save sensor settings.

8. PROGRAMMABLE PARAMETERS (Using sensor control buttons)

FUNCTION Number of red LED flashes from 1-9 indicate the function	SETTING Number of green LED flashes indicate the setting for each function	DESCRIPTION	SETTING RECOMMENDATIONS	REMOTE CONTROL SETTING POSSIBLE
1 Sensitivity	1 Smallest Detection Area 2 3 4 5 6 ☆ 7 8 9 10 Largest Detection Area	Increase or decrease the size of the detection area	Sensor Housing Angle	✓

Sensor Housing Angle (Function 1 Sensitivity)

Installation Height	15°	30°	45°	>45°
7m	8	4	2	1
5m	6	6	3	1
3.5m	6	5	4	1
2.5m	4	4	4	1

FUNCTION	SETTING	DESCRIPTION		REMOTE
2 Vehicle Detection	1 Low 2 Medium ☆ 3 High		Sensor Housing Angle	✓

Installation Height	15°	30°	45°	>45°
7m	1	2	2	1
5m	1	2	2	2
3.5m	1	2	2	3
2.5m	1	2	2	3

FUNCTION	SETTING	DESCRIPTION	REMOTE
3 Human Presence Detection	1 Min ☆ --- 7 Max	When a value of 1 is chosen, cross-traffic suppression is deactivated. When values between 2-7 are chosen, cross-traffic suppression is activated.	✓

Detection without cross-traffic suppression
Sensor Housing Angle

Installation Height	15°	30°	45°	>45°
7m	1	1	1	1
5m	1	1	1	1
3.5m	1	1	1	1
2.5m	1	1	1	1

Detection with cross-traffic suppression
Sensor Housing Angle

Installation Height	15°	30°	45°	>45°
7m	4-7	2-7	2-7	2-7
5m	4-7	4-7	4-7	4-7
3.5m	4-7	4-7	6-7	6-7
2.5m	4-7	6-7	6-7	6-7

FUNCTION	SETTING			REMOTE
4 Vehicle Presence Relay	1 Vehicle forward ☆ 2 Vehicle backwards 3 Vehicle forward/backwards 4 Person/vehicle forward 5 Person/vehicle backwards 6 Person/vehicle forwards/backwards			✓
5 Human Presence Relay	1 Person forward ☆ 2 Person backwards 3 Person forward/backwards 4 Vehicle forward 5 Vehicle backwards 6 Vehicle forwards/backwards			✓
6 Relay Hold Time	1 0.5s 2 1s ☆ 3 2s 4 3s 5 4s 6 5s 7 10s 8 15s 9 20s 10 25s 11 30s 12 60s 13 300s	The amount of time the relay stays active once activated		✓
7 Relay Contact	1 N.O. Contact ☆ 2 N.C. Contact	N.O. Contact Closes on detection / N.C. Contact Opens on detection		✓

8 Responsiveness	1 Fast 2 Normal ☆ 3 Slow			✓

Behaviour	Setting
More reliable detection of people	Fast (1)
Reliable vehicle detection	Normal (2)
Reliable differentiation between vehicles & people	Slow (3)

| 9 Device Address	1 Address 1 ☆ --- 15 Address 15	If there are several sensors in the vicinity of the remote control (sold seperately), these sensor must be set to have different device addresses	X
RESET	Press the FUNCTION and SETTING simultaneously for about 5s	Reset the sensor to factory settings. The LED flashes GREEN/RED for approximately 10s.	✓

Programming the HR-Robus with the Robus-RC Remote Control   (☆ In the table below indicates default factory settings.)

1/ To enter programming mode, press the 🔓 key on the remote control.

2/ When programming mode is entered the RED LED on the sensor flashes slowly (2Hz). If the remote control has been security enabled the RED LED on the sensor flashes fast (5Hz) and expects you to enter a four-digit security code. Once the correct security code has been entered the sensor LED flashes slowly (2Hz)

3/ When one of "Function Keys" as illustrated in the below table is pressed on the remote control the RED LED flashes quickly (5Hz) indicating that a numeric "Setting" value is expected.

4/ Numeric values can then be entered to change the "Setting" of the function selected in 3 above. The GREEN LED will flash the same number of times as the number pressed on the remote control to indicate that the setting has been registered in the sensor. The +/- keys can also be used to increase or decrease some settings as indicated in the table below.

5/ Current settings of any function can be checked by pressing the function key in question followed by the ? Key

6/ To exit programming mode press the 🔓 key twice.

Setting a four digit security code for the Robus-RC Remote Control for the first time
1/ Press the 🔓 key followed by the 🔓 key on the remote control. The RED LED on the sensor should flash fast (5Hz).

2/ Enter a four digit security code of your choice and memorise it. The sensor will return to its normal operating state as indicated by the GREEN LED on the sensor.

3/ To enter programming mode press the 🔓 keys on the remote control. The RED LED will flash quickly (5Hz) on the sensor. Enter the security code on the remote control to enter parameterization mode which is indicated by a slow flashing LED (2Hz). If you enter the incorrect security code, the sensor exits programming mode and returns to its normal operating state as indicated by the GREEN LED.

4/ Note: After a sensor power reset, no security code is required to unlock the sensor for 30 minutes.

Changing the four digit security code for the Robus-RC Remote Control
1/ Whilst in programming mode, press the 🔓 key. The RED LED on the sensor should flash fast (5Hz) indicating that the sensor is waiting for a new four-digit security code to be entered.

2/ Within 60 seconds enter a new four-digit security code
Other Functions
1/ **Locking the IR Interface:** Press the 🔓 key once. The RED LED on the sensor should flash fast (5Hz). Press the "9" key to lock the sensor. The remote control can then only be used within the first 60 seconds after power ON.

Note; Whilst in programming mode press🔓followed by "0" to clear the security code or lock

9. PROGRAMMABLE PARAMETERS Using Robus-RC Remote Control (Sold Separately) ± parameters can be adjusted using + and - keys

FUCTION KEY	FUNCTION	SETTING — Number of green LED flashes indicate the setting for each function	DESCRIPTION	SETTING RECOMMENDATIONS
🔓	Unlock remote control		Unlock remote control to begin sensor programming	
🔓 x 2	Lock remote control		Lock the remote control once programming is finished	
SENS	Sensitivity ±	0 Smallest Detection Area / ---- / 5 Medium Detection Area ☆ / ---- / 9 Largest Detection Area	Increase or decrease the size of the detection area	**Sensor Housing Angle** — Installation Height / 15° 30° 45° >45° / 7m: 8 4 2 1 / 5m: 6 6 3 1 / 3.5m: 6 5 4 1 / 2.5m: 4 4 4 1
CAR	Vehicle Detection ±	1 Low / 2 Medium ☆ / 3 High		**Sensor Housing Angle** — Installation Height / 15° 30° 45° >45° / 7m: 1 2 2 1 / 5m: 1 2 2 2 / 3.5m: 1 2 2 3 / 2.5m: 1 2 2 3
PER	Human Presence Detection ±	1 Min ☆ / --- / 7 Max	When a value of 1 is chosen, cross-traffic suppression is deactivated. When values between 2-7 are chosen, cross-traffic suppression is activated.	**Detection without cross-traffic suppression** — Sensor Housing Angle / Installation Height / 15° 30° 45° >45° / 7m: 1 1 1 1 / 5m: 1 1 1 1 / 3.5m: 1 1 1 1 / 2.5m: 1 1 1 1 **Detection with cross-traffic suppression** — Sensor Housing Angle / Installation Height / 15° 30° 45° >45° / 7m: 4-7 2-7 2-7 2-7 / 5m: 4-7 4-7 4-7 4-7 / 3.5m: 4-7 4-7 6-7 6-7 / 2.5m: 4-7 6-7 6-7 6-7
OCAR	Vehicle Presence Relay	4 Vehicle forward ☆ / 5 Vehicle backwards / 6 Vehicle forward/backwards / 7 Person/vehicle forward / 8 Person/vehicle backwards / 9 Person/vehicle forwards/backwards		
OPER	Human Presence Relay	1 Person forward ☆ / 2 Person backwards / 3 Person forward/backwards / 4 Vehicle forward / 5 Vehicle backwards / 6 Vehicle forwards/backwards		
TIME	Relay Hold Time ±	0 0.5 / 1 1s ☆ / 2 2s / 3 3s / 4 5s / 5 10s / 6 20s / 7 30s / 8 60s / 9 300s		
OUT	Relay Contact	1 N.O. Contact ☆ / 2 N.C. Contact		
STEP	Responsiveness ±	1 Fast / 2 Normal ☆ / 3 Slow		**Behaviour / Setting** — More reliable detection of people: Fast (1) / Reliable vehicle detection: Normal (2) / Reliable differentiation between vehicles & people: Slow (3)
SET-9	Factory Setting Reset	9 Factory Setting Reset	Reset the sensor to factory settings. The LED flashes GREEN/RED for approximately 10s.	
F2	Permanent Relay Activation (To assist with door maintenance)	1 Automatic ☆ / 2 Vehicle + Human relay permanently active / 3 Vehicle relay only permanently active / 4 Human relay only permanently active / 5 Vehicle + Human relay permanently inactive		
?	Query the setting for a function			

10. VEHICLE AND HUMAN PRESENCE DETECTION EXPLANATION AND EXAMPLES

The HR-Robus can distinguish between the detection of human and vehicular traffic. This distinction is dependent on the connection and settings of the Vehicle and Human presence relays. Vehicle Detection, Human Presence Detection and Responsiveness functions should also be adjusted as explained in section 8 to ensure detection accuracy.
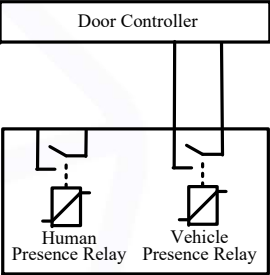
The HR-Robus has two relay outputs as follows:
Vehicle Presence Relay: Which can be set to detect a vehicle only or a vehicle/person.
Human Presence Relay: Which can be set to detect a vehicle or a person.

EXAMPLE 1: Door controller with only 1 relay input. Vehicle detection only required.

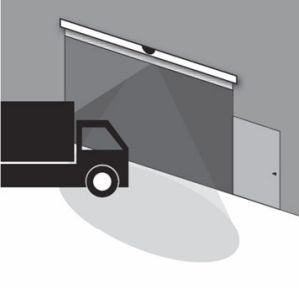Door Controller — Human Presence Relay — Vehicle Presence Relay

Connect the Vehicle Presence Relay to the door controller and configure the Vehicle Presence Relay setting to (1) Vehicle forward.

Responsiveness should be set to (2) Normal and the Vehicle Detection function should be set as per the table in section 8 of this manual depending on the installation height of the sensor.
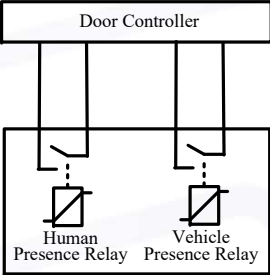
EXAMPLE 2: Door controller with 2 relay input. One to activate the industrial door and one to activate a separate pedestrian access door.

Door Controller — Human Presence Relay — Vehicle Presence Relay

Connect the Vehicle Presence Relay and Human Presence Relay to the door controller.
Configure the Vehicle Presence Relay setting to (1) "Vehicle Forward".
Configure the Human Presence Relay setting to (1) "Person Forward".

Responsiveness should be set to (2) Normal and the Vehicle Detection and Human Presence Detection functions should be set as per the table in section 8 of this manual depending on the installation height of the sensor.

EXAMPLE 3: Door controller with 2 relay input. One set to open the door fully when a vehicle approaches and half-way when a person approaches

Door Controller — Human Presence Relay — Vehicle Presence Relay

Connect the Vehicle Presence Relay and Human Presence Relay to the door controller.
Configure the Vehicle Presence Relay setting to (1) "Vehicle Forward".
Configure the Human Presence Relay setting to (1) "Person Forward".

Responsiveness should be set to (2) Normal and the Vehicle Detection and Human Presence Detection functions should be set as per the table in section 8 of this manual depending on the installation height of the sensor.
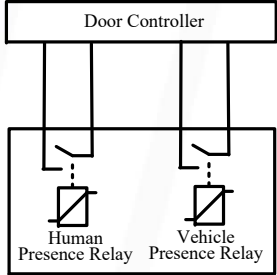
11. TROUBLESHOOTING

Fault	Corrective Action
No LED lit	No power supply connected. Device has malfunctioned
Door is Detected	Tilt the sensor housing away from the door. Reduce the sensitivity setting. Increase Responsiveness. Increase Human Presence Detection.
Remote Control does not respond	Device is locked. Cycle power to the sensor, the sensor can now be configured without a code for 30 minutes. Remote Control batteries are dead.
Person is mistaken for a vehicle	Increase the vehicle detection properties. Increase Responsiveness. If only vehicles are to be detected then reduce the sensitivity setting.
Vehicle is mistaken for a person	Lower the vehicle detection properties. Increase Responsiveness.
Object is detected too late	Reduce Responsiveness. Increase sensitivity
Object detection is too sensitive	Increase Responsiveness. Reduce sensitivity
Transverse movement of people not detected	Increase human-presence detection
False door activations caused by rain, vibrations etc.	Increase Responsiveness. Increase human presence detection, reduce sensitivity

< Disclaimer > The manufacturer cannot be held responsible for below.
1. Misinterpretation of the installation instructions, miss connection, negligence, sensor modification and inappropriate installation.
2. Damage caused by inappropriate transportation.
3. Accidents or damages caused by fire, pollution, abnormal voltage, earthquake, thunderstorm, wind, floods and other acts of providence.
4. Losses of business profits, business interruptions, business information losses and other financial losses caused by using the sensor or malfunction of the sensor.
5. Amount of compensation beyond selling price in all cases.