# FALCON EX

## Motion Sensor with Explosion-Proof Housing for Industrial Doors

*Visit website for available languages of this document.*

FALCON EX: for normal to high mounting (11.5 - 23 ft)
FALCON EXXL: for low mounting (6.5 - 11.5 ft)
FALCON EXWIDE: for wide detection field

## DESCRIPTION


1. Explosion-proof housing
2. Microwave sensor
3. Adjustable bracket

## MICROWAVE SENSOR SPECIFICATIONS

| | |
|---|---|
| Technology: | microwave doppler radar |
| Transmitter frequency: | 24.150 GHz |
| Transmitter radiated power: | < 20 dBm EIRP |
| Transmitter power density: | < 5 mW/cm² |
| Mounting height: | FALCON EX: 11.5 – 23 ft; FALCON EXXL: 6.5 – 11.5 ft;<br>FALCON EXWIDE: 11.5 – 21 ft |
| Detection zone: | FALCON EX: 13 x 16 ft @ 16ft; FALCON EXXL: 13 x 6.5 ft @ 8.2 ft<br>FALCON EXWIDE: 30 x 11ft @ 21ft. (typical at 30° and field size 9) |
| Min. detection speed: | 2 in/s* |
| Supply voltage: | 12 – 24 VAC ±10%; 12 – 24 VDC +30% / -10% |
| Mains frequency: | 50 – 60 Hz |
| Power consumption: | < 2W |
| Output:<br>max. contact voltage:<br>max. contact current:<br>max. switching power: | relay (free of potential change-over contact)<br>42V AC/DC<br>1A (resistive)<br>30 W (DC) / 60 VA(AC) |
| Temperature range: | -22 – 140 °F |
| Housing certification: | (Adalet / Scott Fetzer Co., UL Listing # E81696)<br>UL Class I, Group BCD; Class II, Group EFG; Class III;<br>CENELEC: EExd IIC, IP66, NEMA 4x; 7BCD, 9EFG |
| Dimensions: | 9 in (L) x 7.5 in (W) x 5.5 in (H) |
| Tilt adjustment angle: | -90 – 30° in elevation |
| Materials: | Copper-free aluminum (Housing); Powder-coated steel (Bracket) |
| Weight: | 10 lbs |
| Cable length: | 100 ft (FALCON EX100, FALCON EXXL100, FALCON EXWIDE)<br>30 ft (FALCON EX, FALCON EXXL) |
| Cable diameter: | ¼" max |
| Electrical Access: | ¾" NPT pipe thread |
| Norm conformity: | R&TTE 1999/5/EC; EMC 2004/108/EC |

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

* Measured in optimal conditions

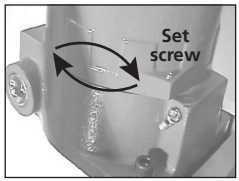
## *INSTALLATION TIPS*

- The sensor must be firmly fastened in order not to vibrate.
- The sensor must not be placed directly behind a panel or any kind of material.
- The sensor must not have any object likely to move or vibrate in its sensing field.
- The sensor must not have any fluorescent lighting in its sensing field.

**To access push buttons, you must open the sensor (see image, right):**

a) Using a hex key, loosen the set screw located on the side of the housing.

b) Unscrew the housing cover.




## 1 MOUNTING

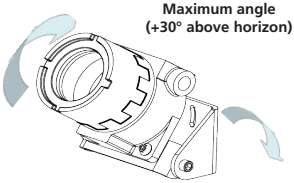
a) Bolt the bracket securely to the wall or other rigid surface.
Make sure that the two 5/16 - 18 Allen head bolts are loose so that the sensor can rotate freely.

b) Rotate the sensor to the appropriate angle for the application. When the bracket rotates, it will click. Every click represents a 7 ½" angle adjustment.

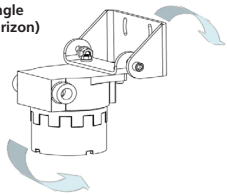
c) Lock the angle adjustment by tightening the two 5/16 - 18 Allen head bolts.

Horizontal angle adjustments can be made by loosening the mounting bolts on the base and twisting to the desired angle.

**Maximum angle**
**(+30° above horizon)**



**Minimum angle**
**(-90° below horizon)**



## 2 WIRING

Connect the wires to the door controller. *Choose between NO and NC contact.*

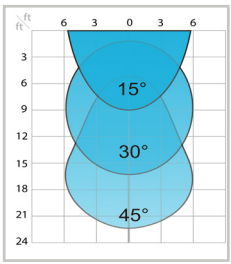

**12-24 VAC/VDC**
**COM**
**NO**
**NC**

European wire color cross-reference:

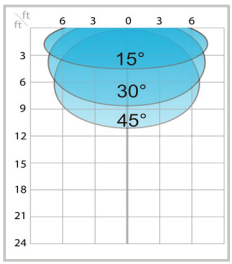
| **US** ← → **EURO** |
|---|
| red ← → green |
| black ← → brown |
| white ← → white |
| green ← → yellow |
| yellow ← → gray |

## 3 DETECTION FIELD DIMENSIONS

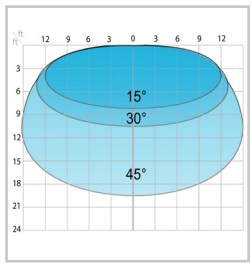
**FALCON EX**
Mounting height: **16 ft**




**FALCON EXXL**
Mounting height: **8 ft**




**FALCON EXWIDE**
Mounting height: **11.5 ft**



## LED SIGNALS

LED flashes quickly | LED flashes | LED flashes slowly | LED flashes x times | LED is off

| NORMAL MODE | | |
|---|---|---|
| | no LED | no detection |
| | red | detection |
| | red & green blinking | power on / learn |

## POSSIBLE SETTINGS BY REMOTE CONTROL

### ADJUSTING ONE OR MORE PARAMETERS


### CHECKING A VALUE


*x = number of flashes = value of parameter*


| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FIELD SIZE | XXS | XS | S | > | > | > | > | **L** | XL | XXL |
| HOLD-OPEN TIME | **0.5 s** | 1 s | 2 s | 3 s | 4 s | 5 s | 6 s | 7 s | 8 s | 9 s |
| OUTPUT CONFIGURATION | | **A** | P | | A = active output; relay energizes upon detection<br>P = passive output; relay de-energizes upon detection | | | | | |
| DETECTION MODE | | bi | **uni** | uni AWAY | bi = two-way detection<br>uni = one-way detection towards sensor<br>uni AWAY = one-way detection away from sensor | | | | | |
| DETECTION FILTER | | **1** | 2 | 3 | 4 | 5 | 6 | | | |

FACTORY VALUES

RESETTING TO FACTORY VALUES:


## DETECTION FILTER (REJECTION MODE)


Choose the correct detection filter for your application with the remote control or push buttons.

**Detection of all targets**
(pedestrians and parallel traffic are detected)

1 = no specific filter

2 = filter against disturbances
(recommended in case of vibrations, rain etc.)

**Detection only of vehicles moving***
(pedestrians and parallel traffic are not detected + disturbances are filtered)

Value recommendations according to angle and height:

| | 23 ft – 11.5 ft | 8 ft |
|---|---|---|
| -75° | 3 | 3 |
| -60° | 4 | 4 |
| -45° | 5 | 4 |

Always check if the chosen value is optimal for the application. The object size and nature can influence the detection.

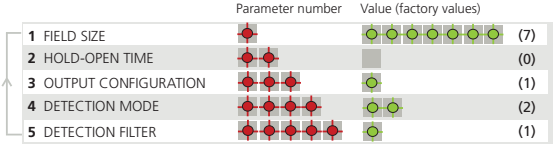
* The vehicle detection filter increases the response time of the sensor.

## POSSIBLE SETTINGS BY PUSH BUTTONS

TO START OR END AN ADJUSTMENT SESSION, press and hold either push button until the LED flashes or stops flashing.

TO SCROLL THROUGH THE PARAMETERS, press the right push button.

TO CHANGE THE VALUE OF THE CHOSEN PARAMETER, press the left push button.




TO RESET TO FACTORY VALUES, press and hold both push buttons until both LEDs flash.

## ACCESS CODE

The access code (1 to 4 digits) is recommended to set sensors installed close to each other.

SAVING AN ACCESS CODE:


DELETING AN ACCESS CODE:


Once you have saved an access code, you always need to enter this code to unlock the sensor.
If you forget the access code, **cycle the power**. For the first minute, you can access the sensor without an access code.

## TROUBLESHOOTING

| | | |
|---|---|---|
| Door remains closed. LED is off. | Sensor power is off. | Check wiring and power supply. |
| Door does not react as expected. | Improper output configuration on sensor. | Check the output configuration setting on each sensor connected to the door operator. |
| Door opens and closes constantly. | The sensor is disturbed by door motion or vibrations caused by door motion. | Ensure sensor is secured properly.<br>Ensure detection mode is unidirectional.<br>Increase tilt angle.<br>Increase detection filter value.<br>Reduce field size. |
| Door opens for no apparent reason. | It rains and the sensor detects raindrops or vibrations. | Ensure detection mode is unidirectional.<br>Increase detection filter value. |
| | In highly reflective environments, the sensor detects objects outside of its detection field. | Change the antenna angle.<br>Reduce field size.<br>Increase detection filter value. |
| Vehicle detection filter is used, but pedestrians are still detected. | Chosen value is not optimal for the given application. | Increase detection filter value.<br>Decrease sensor angle.<br>Increase mounting height.<br>Ensure detection mode is unidirectional. |
| LED flashes quickly after unlocking. | Sensor needs access code to unlock. | Enter correct access code.<br>If you forgot the code, cycle the power to access the sensor without access code. Change or delete the access code. |
| Sensor does not respond to the remote control. | Batteries in the remote control are weak or installed improperly. | Check batteries and change if necessary. |

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

### BEA, INC. INSTALLATION/SERVICE COMPLIANCE EXPECTATIONS

BEA, Inc., the sensor manufacturer, cannot be held responsible for incorrect installations or inappropriate adjustments of the sensor/device; therefore, BEA, Inc. does not guarantee any use of the sensor 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 system installation 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 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).

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

AAADM ANSI DASMA DHI IDA



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