

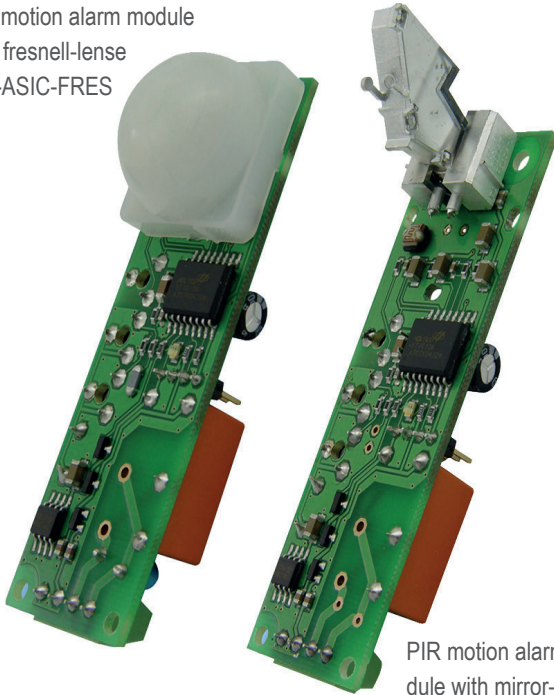
# OPERATION MANUAL



## PIR motion alarm module

### Description

PIR motion alarm module  
with fresnell-lense  
PIR-ASIC-FRES



PIR motion alarm module with mirror- optic  
PIR-ASIC

### Features:

- Motion alarm module with ASIC
- Two versions available
- Adjustable, delayed triggerable timer
- Day/Night operation through light sensor
- Digital evaluation filter
- Adjustable sensitivity
- Test mode & continuous circuit
- Interference proof circuit design
- High power relay output

### Applications:

- Automatic lighting control
- 12 V operation, automotive systems
- Solar lights, LED-outdoor lighting
- Fans for bathrooms and sanitary rooms
- Alarm and safety systems
- Presence alarm units, building instrumentation
- OEM applications

### Description:

The motion alarm unit module is suitable for a large number of applications, in which movement or presence is to be registered and based on this, a switching process is to be initiated. The sensor reacts to the heat radiation from moving bodies. The module has a timer and a high power relay output and hence it is ideally suitable, for example, for automatic triggering of lights. Because of the digital evaluation filters integrated in the ASIC, the module is also suitable for application in alarming systems, where a high level of actuating reliability is essential.

The operating voltage of 12V is internally stabilised, therefore the module is also suitable for battery driven applications like cars or vans, and also for battery- or solar powered lights.

The sensitivity, time delay and light dependent switching point can be adjusted over wide ranges through 3 potentiometers. Hence, the module can be well adapted as per the desired application.

In the ASIC, there are also further special functions like test mode for ease of adjustment and continuous mode with long time delay which can be switched on with an external button. The RESET circuit starts the light during specified switching on phase, until the sensor system becomes operational.

The electronics module without housing is meant for mounting into customised devices.

Technical Data		
Operating temperature		-20...+60 °C
Operation humidity		0...90% RH (bedewing not admissible)
Switch point light intensity		approx. 100...2000 Lux
Follow-up time		10...200 sec.
Frequency bandwidth		0,2...10 Hz
Angle of aperture	PIR-ASIC-FRES:	horizontally ± 50° vertical ± 30°
	PIR-ASIC:	horizontally ± 15°
Operating distance	PIR-ASIC-FRES:	approx. 4...10 m adjustable
	PIR-ASIC:	approx. 2...8 m adjustable
Output		Isolated free relay contact 250 V AC / 8 A, 30 V DC / 8 A
Power supply		11...15 V DC
Current draw		quiescent 6 mA operating 21 mA
CE-conformance		2014/30/EU
EMV-Störaussendung		EN 61000-6-3:2011
EMV-Störfestigkeit		EN 61000-6-1:2007
Dimensions (W x H x D)	PIR-ASIC-FRES:	26 x 78 x 20 mm
	PIR-ASIC:	26 x 78 x 26 mm
Article no.		
PIR motion alarm module with fresnell-lense		PIR-ASIC-FRES
PIR motion alarm module with mirror-optic		PIR-ASIC

## PIR motion alarm module

### Working principle:

PIR motion alarm unit operates with the help of pyroelectric sensors, which have maximum sensitivity in the range of heat radiation from living bodies. At 37°C body temperature, the spectral sensitivity lies between 7 and 14  $\mu\text{m}$ . In the internal construction, the PIR sensors are segmented, which means in one component, two or more individual elements are in interconnected form, so that the self temperature of sensor gets itself compensated. Only the change in PIR signal is processed by the subsequent evaluation circuit.

In devices for wall mounting, normally double element sensors are used which have a horizontal preferred direction. The mounting direction of such sensors is described accordingly and this should be adhered to. For ceiling mounting, four element sensors are more suitable with which hemispherical characteristics can be achieved.

### Lens:

An alteration of output voltage is achieved only because the part segments of the sensor are acted upon differently with the infrared radiation. In addition, an optical system or a special Fresnel lens is required, which subdivides the area in front of the sensor element into segments and correspondingly reproduces it on the part segments of the sensor. If one looks at the overall system considering optics, sensor and evaluation circuit, it can be appreciated that the lens has main influence on the performance of the system.

Further information about our extensive delivery program for lens and mirror-optics can be obtained on request.

### RESET - Function:

After connecting to supply voltage, the sensor requires about 40 seconds time to become ready for operation. During this time span, the relay is switched on.

During the first 10 seconds after switching on, the device can be changed to TEST operating mode by pressing the button twice, otherwise the sensor is in light and motion controlled automatic operation. 40 seconds after RESET or powering up the system, one can switch to continuous ON operation by pressing the button twice.

If the button is operated for more than 3 seconds, the circuit executes a renewed Reset and behaves exactly as though the operating voltage has been switched on again.

### Testmode:

The PIR module is provided with a test mode, in which the relay triggers for approx. 2 seconds with each recognised movement. With this, for example, it is possible to adjust the sensitivity as per the local conditions during setting up.

In order to arrive to the test mode, the button must be operated within

first 10 seconds after switching on or by consecutively pressing twice after RESET. For quitting, the relay shortly closes three times (2 Hz). The test mode is left automatically, if no more movement is recognized for a time gap of more than 30 seconds. On leaving the test mode, the relay also shortly closes 3 times (at 2 Hz) to signal the changeover.

### Automatic Operation/Continuous Function:

One can switchover to continuous light mode, by pressing the button twice consecutively, 40 seconds after switching on. The relay closes consecutively for three long times (at 1 Hz) as a confirmation. The continuous function will again automatically discontinue after 8 hours of switching on. Alternatively, the continuous function can also be discontinued by renewed, twice repeated pressing of the button. The relay acknowledges this by three brief closures (2 Hz). The device is again in light and motion controlled automatic operation.

### Normal Operation (Automatic Mode):

In the automatic mode, the module is brightness and movement controlled. In lighted environment (daylight), the relay is not triggered. The light sensor has an additional time related branch, so that short-term events under 5 seconds are not registered, for example, short time illumination of light sensor through a car driving past at night doesn't disturb the function.

In dark environment (night), the module triggers the relay for an adjustable time, after a movement is recognized. A renewed, recognized movement sets back the delay timer, which means the delay timer starts again.

### Evaluation Filter:

The ASIC evaluates the recognized movement events as per time and frequency to ensure a reliable recognition.

- Either three very short trigger impulses within 2 seconds or
- Two trigger events, where one impulse must be longer than 0.34 seconds.
- A trigger impulse of more than 0.34 seconds duration.

### Settings:

The sensitivity of the module for movement events can be adjusted over a potentiometer "SENSITIVITY".

The time period, for which the relay is to be triggered, can be adjusted over the potentiometer "TIMER".

The adjustment of light sensor at the desired brightness switching point is done over the potentiometer "LIGHT".

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### Connector Configuration:

#### Terminal Strip:

Pin	Desc.	Function
1	GND	Ground
2	VCC	Operating voltage
3	REL1	Relay contact, potential free NO
4	REL2	Relay contact, potential free NO

#### Pin Strip:

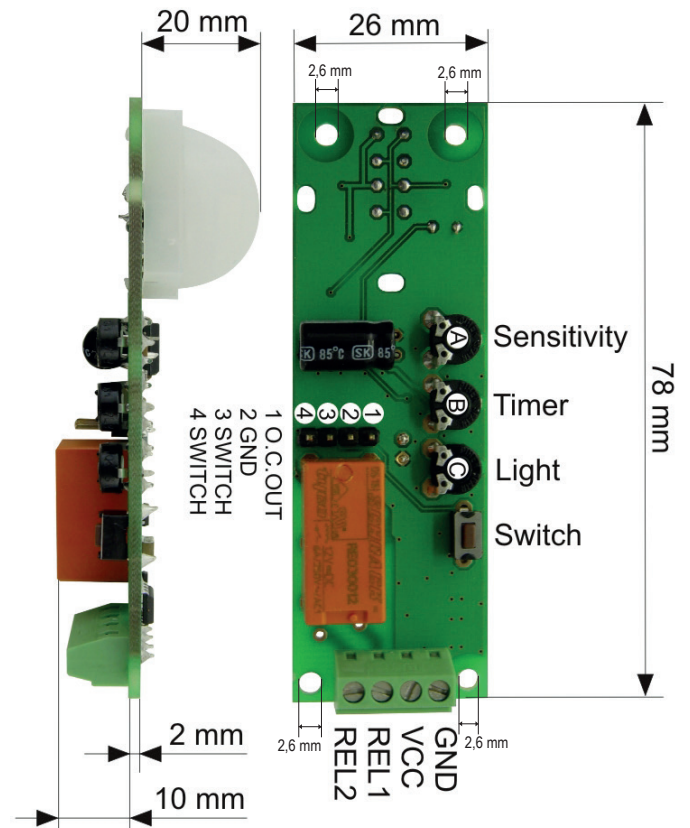
Pin	Desc.	Function
1	O.C.OUT	NPN-output (Relay)
2	GND	Ground
3	SWITCH	External switch
4	SWITCH	External switch

### Adjustment:

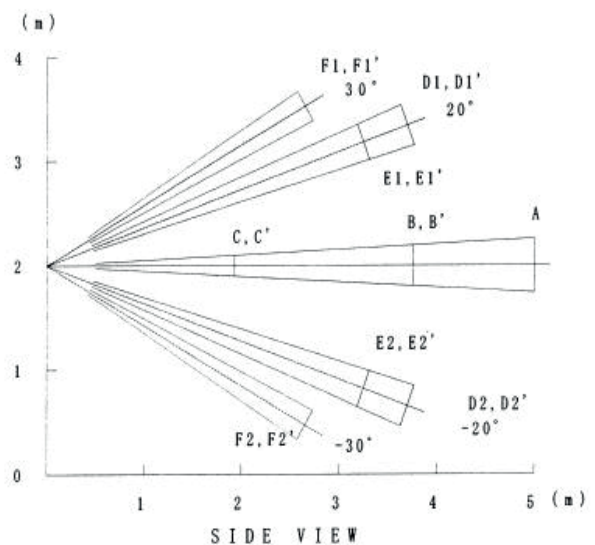
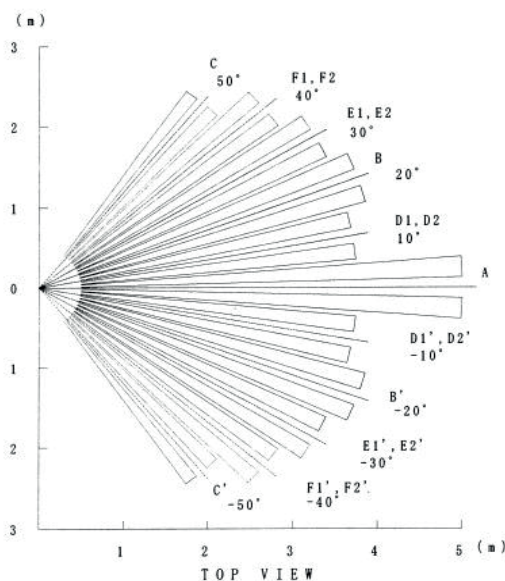
#### Potentiometer:

No.	Desc.	Function
A	SENSIVITY	Sensitivity of motion recognition
B	TIMER	Active switching duration of output
C	LIGHT	Brightness triggered ON and OFF switching pointt

### Dimensions PIR-ASIC-FRES:



### Area segments PIR-ASIC-FRES:

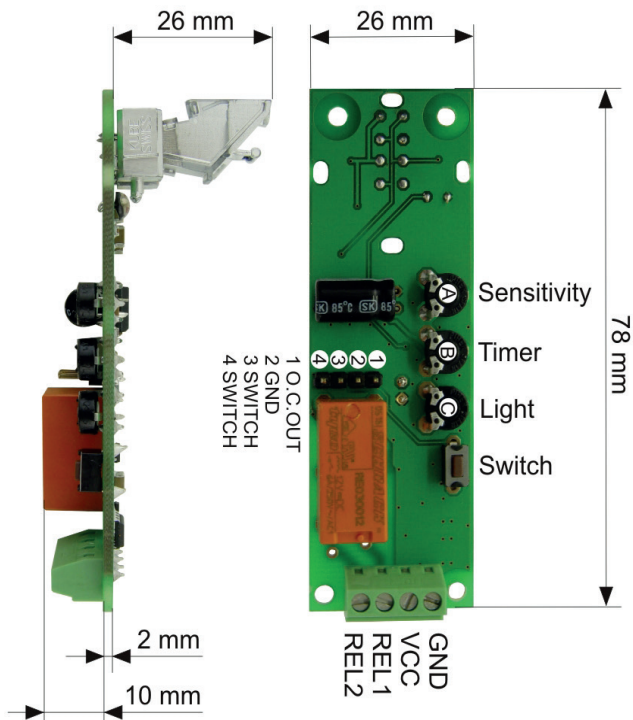


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## PIR motion alarm module

Dimensions PIR-ASIC:



### Attention

Please avoid extreme mechanical and inappropriate exposure.

The device/product is not suitable for potential explosive areas and medical-technical applications.

### Note:

Turn potentiometer clockwise:

- SENSIVITY: Superior sensivity by movement (shorter operating distance)
- TIMER: Long turn-on time relais output
- LIGHT: Switching threshold at lower brightness (illumination)

Turn potentiometer anti clockwise:

- SENSIVITY: Lower sensivity by movement (long operating distance)
- TIMER: Shorter turn-on time relais output
- LIGHT: Switching threshold at higher brightness (illumination)

Area segments PIR-ASIC:

