

Busch-Wächter®

Busch-Watchdog® 180
FM sensors
6810-21X-101-500
6800-3x-102 C-500
6800-xxx-104-500
6800-xxx-104 M-500



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1 Safety



Warning

Electric voltage!

Risk of death and fire due to electrical voltage of 230 V.

- Work on the 230V supply system may only be performed by authorised electricians!
- Disconnect the mains power supply prior to installation and/or disassembly!



Information regarding security against sabotage

Please note that flush-mounted sensors are not suited as break-in and burglary detectors. The required security against sabotage is missing!



Information regarding activation

Activation of the power circuit when the incandescent lamp is changed is possible only by deactivating an upstream main switch or the automatic circuit breaker.



Information regarding documentation

These operating instructions describe both the standard (Art. No. 6810-21x-101 ...) and the comfort sensors (Art. No. 6800-xxx-10x(M) ...) as "flush-mounted sensors." Please pay attention to the correct type assignment in the description.

The type designation can be found on the back side of the respective device.

2 Environment



Consider the protection of the environment!

Used electric and electronic devices must not be disposed of with domestic waste.

- The device contains valuable raw materials which can be recycled. Therefore, dispose of the device at the appropriate collecting depot.

2.1 Disposal

All packaging materials and devices bear the markings and test seals for proper disposal. Always dispose of the packaging material and electric devices and their components via the authorized collecting depots and disposal companies.

The products meet the legal requirements, in particular the laws governing electronic and electrical devices and the REACH ordinance.

(EU Directive 2002/96/EC WEEE and 2002/95/EC RoHS)

(EU REACH ordinance and law for the implementation of the ordinance (EC) No.1907/2006)

3 Technical data

Flush-mounted sensor type 6810-21x-101 ...

Twilight sensor	Approx. 5 Lux – daylight operation
Switch-off delay	Approx. 80 sec. permanently set
Detection range	180° horizontal, 12 m frontal, 8 m on each side (see Chapter .2)
Protection type:	IP 20
Ambient temperature range:	0 – +30° C

Flush-mounted sensor type 6800-xxx-104 ... / 6800-xxx-104M ...

Twilight sensor	Approx. 5 Lux – daylight operation
Switch-off delay	Approx. 10 sec. – 32 min. Short-time pulse 1 sec
Detection range	180° horizontal Select lens: – 12 m frontal, 8 m on each side (see Fig. 2) Multi-lens: – Dependent on the respective mounting height (see Fig. 3)
Protection type:	IP 20
Ambient temperature range:	0 – +30° C

Flush-mounted sensor type 6800-3x-102 ...

Twilight sensor	Approx. 5 Lux – daylight operation
Switch-off delay	Approx. 10 sec. – 32 min. Short-time pulse 1 sec
Detection range	180° horizontal, 15 m frontal, 10 m on each side (see Fig. 4)
Protection type:	IP 44
Ambient temperature range:	-25 – + 55°C

4 Function

4.1 Functional principle

The flush-mounted sensor is a passive infrared movement detector and reacts to changes in heat radiation in the detection range. If a person or another heat source enter the detection range, the flush-mounted sensor switches on the connected lighting.

As long as a thermal movement is registered in the detection range, the lighting remained switched on. If the heat source leaves the detection range or remains motionless, the lighting is switched off after 80 seconds (type 6810-21x-101 ...) or after the switch-off delay (types 6800-xxx-10x(M) ...).

Flush-mounted sensors work in an anti-glare manner. Even in case light, e.g., a torch, is shined directly into them, they retain a monitoring function for more than 90 seconds.

4.2 Possible combinations

	 6810-21x-101 ...	 6800-3x-102 C ...	 6800-xxx-104 ...	 6800-xxx-104M ...
 6401 U-102 ...	X	X	X	X
 6402 U ...	X		X	X
 6812 ...	X		X	X
 6804 U-101 ...	X		X	X
 6805 U ...	X		X	X
 6593 U ...	X		X	X

4.3 Function with flush-mounted inserts

The range of functions of the respectively used flush-mounted inserts is determined by the flush-mounted sensor.



Caution

Please note the safety notices and information regarding load types, mounting, and so on in the respective operating instructions.

4.4 Special features

4.4.1 Auxiliary post insert 6805U ...

Please note that the switching-on delays of the main unit and auxiliary posts add up when the auxiliary post insert 6805U ... is used.

4.4.2 Universal dimmer 6593U ...

Connected consumers can only be switched, no longer dimmed. The adjustment of a certain minimum brightness is no longer possible.

In combination with the 6593U ... (operation mode: soft OFF), the Busch Watchdog Flush-Mounted Insert does not switch off the light abruptly, but rather dims it within 60 seconds and then switches it off. If an additional movement is detected in this time, the flush-mounted insert switches to 100% again.

4.5 Detection ranges

4.5.1 Overview of the detection ranges

Detection range for type:

- 6810-21x-101 ...
- 6800-xxx-104 ... (select lens)
- 6800-xxx-104 M ... (multi-lens)
- 6800-3x-102 C ... (combination lens)

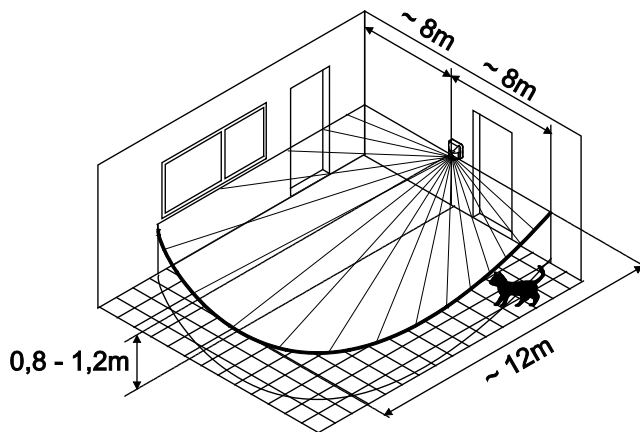


Fig. 1: Detection range



Note

The mounting height may not exceed 1.2 m.

4.5.2 Detection levels and detection ranges

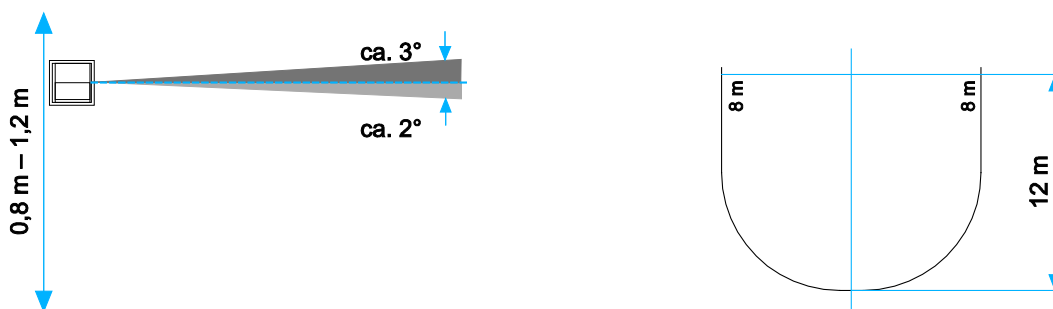


Fig. 2: Detection level and detection range of select lens

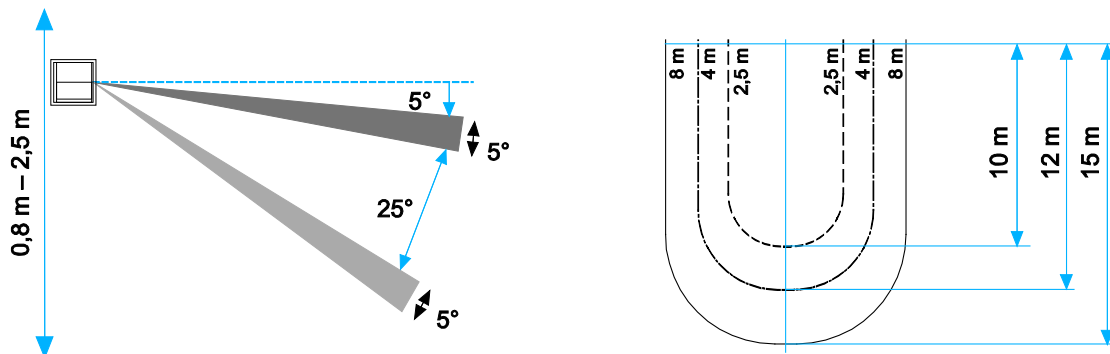


Fig. 3: Detection level and detection range of multi-lens

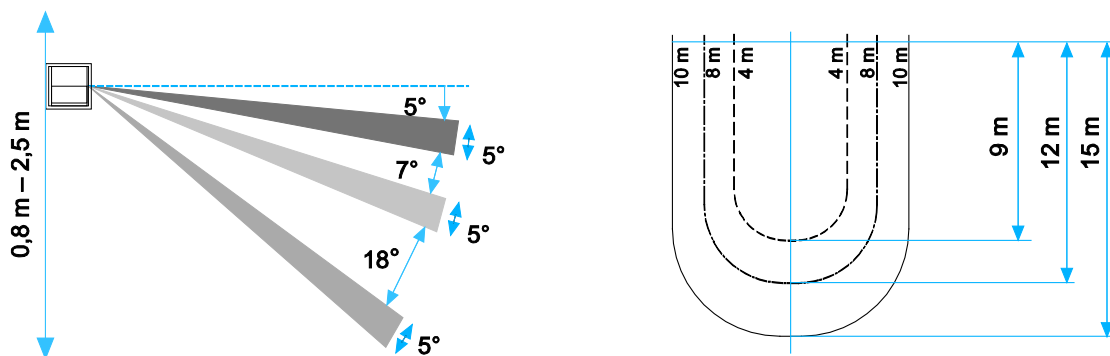


Fig. 4: Detection level and detection range of combination lens

4.5.3 Limitation of the detection range

Use of adhesive film:

The detection range of the flush-mounted sensor amounts to 180° horizontal. Due to local conditions, the detection range can be limited.

To do this, proceed as follows.

1. Cut the included adhesive film to the desired length.
2. Tape the adhesive film section from the front before the lens of your flush-mounted sensor to the area where the detection should be covered.

5 Mounting / Installation



Warning

Electric voltage!

Risk of death and fire due to electrical voltage of 230 V.

- Low-voltage and 230 V cables must not be installed together in a flush-mounted socket!
In case of a short-circuit there is the danger of a 230 V load on the low-voltage line.

5.1 Requirements for the electrician



Warning

Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the user of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
 1. Disconnect from power;
 2. Secure against being re-connected;
 3. Ensure there is no voltage;
 4. Connect to earth;
 5. Cover or barricade adjacent live parts.
- Use suitable personal protective clothing.
- Use only suitable tools and measuring devices.
- Check the type supply network (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).

5.2 Device diagram

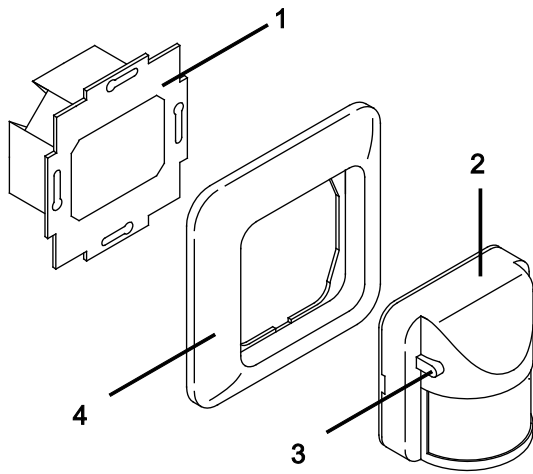


Fig. 5: Device diagram for protection class IP 20

No.	Component
1	Flush-mounted insert
2	Flush-mounted sensor
3	Sliding switch (only for 6800-xxx-104(M) ...)
4	Cover frame

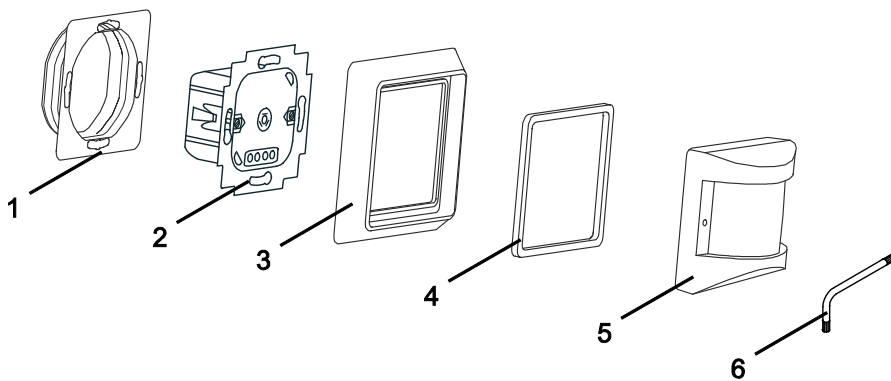


Fig. 6: Device diagram for protection class IP 44

No.	Component
1	Sealing ring (included with the cover frame)
2	Flush-mounted insert
3	Cover frame
4	Sealing ring (included with the flush-mounted sensor)
5	Flush-mounted sensor
6	Torx spanner (included with the flush-mounted sensor)

5.3 Mounting

- The flush-mounted sensor may not be covered by fixed or moving objects.
- To prevent incorrect switching, maintain a minimum distance of 2 m to lamps.
- Perform the mounting laterally to the direction of movement to achieve the optimum functionality.

5.3.1 Adapter

For the necessary setting of the operating parameters, use the included adapter. This simplifies handling.

1. Insert the adapter between the black plug-in socket on the flush-mounted insert and the plugs on the back side of the sensor element.
 - The adapter may be removed plugged in when the device is energised.
2. Adjust the sensor; see the "Manual settings" chapter on page 15.
3. Remove the adapter again.

5.3.2 Mounting

Built-in position of the connecting terminals on the flush-mounted inserts:

Flush-mounted sensor type	Mounting height, application	Built-in position of the connecting terminals
6810-21X-101 ...	0.8 – 1.2 m	Bottom
6800-xxx-104 ...		
6800-7x-104(M) ...	0.8 – 1.2 m (stairwell)	Top
	2.0 – 2.5 m (room monitoring)	Top
6800-xxx-103M .../104(M) ...	0.8 – 1.2 m (stairwell)	Bottom
	2.0 – 2.5 m (room monitoring)	Bottom



Note

The middle position of the sliding switch (Fig. 5, Position 3) can be secured against unauthorised adjustment (e.g., for use in hotels and administration buildings) using an included screw on the back side of the device.

For mounting, perform the following steps:

1. At the end of the adjusting work, remove the adapter.
2. Make sure that the connecting terminals of the flush-mounted insert in the flush-mounted socket are located in the right position; see table.

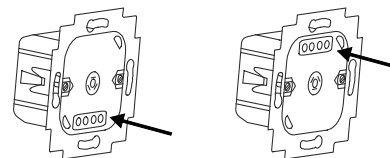


Fig. 7: Built-in position of connecting terminals

3. Place the sensor (Fig. 5, Position 2) and the cover frame (Fig. 5, Position 4) on the flush-mounted insert and lock it into place.
 - Make sure that the plug-in connection on the back side does not get jammed.
 - If mounting is difficult, check whether a burr has formed at the lock opening of the flush-mounted insert and, if so, remove it.

5.3.3 Dismantling

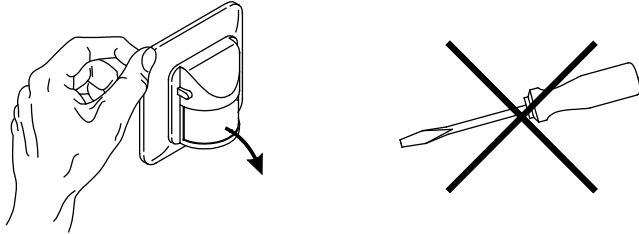


Fig. 8: Dismantling

For dismantling, leverage out the flush-mounted sensor using the frame of the flush-mounted insert.

6 Commissioning

The first time the mains voltage is activated or the mains is interrupted, the connected consumers are switched on independently of the ambient brightness:

When flush-mounted sensors 6810-21x-101 ... are used

- for about 80 seconds

When flush-mounted sensors 6800-xxx-10x(M) ... are used

- for the time set on the flush-mounted sensor (at least one minute for time settings less than one minute, exception: short-time pulse \square)



Notes

- After this time, another detection takes place, but only after the integrated twilight switch is released.
When the mains voltage is activated or the mains is interrupted, the flush-mounted devices respond as described under the "NC contact button" auxiliary post.
- After each automatic deactivation, even during installation and testing, the set brightness value is not taken into consideration until a minute has passed!

In case of detections during this time, the watchdog always switched on.

7 Operation

7.1 Manual settings

7.1.1 Type 6810-21x-101 ...

7.1.1.1 Factory setting

This flush-mounted sensor is set to the following values at the factory (handwheel on the back side of the device):

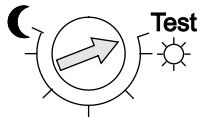


Fig. 9: Response threshold/test

7.1.1.2 Response threshold

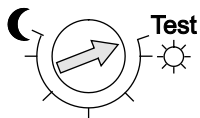


Fig. 10: Response threshold

The integrated twilight sensor regulates the response threshold (light sensitivity) from which the detection is activated. Set the response threshold according to the following points:

- "Moon" symbol: activation only at dusk.
- "Sun" symbol: activation at any brightness.
- Position between both symbols: determine a setting by testing until the desired response threshold is reached.
 - Walk back and forth in front of the sensor until the flush-mounted sensor triggers. Stop and remain still until the consumers are switched off. Confirm the test results by walking again if pertinent.
- "Test" position: activates at any brightness since the twilight sensor is deactivated.



Notes

- If the test position is left, the device activates after a self-test of 80 seconds.
- In case of a strong infrared signal, slight deviations in the switch-off delay may result.
- In case of every new movement in the detection range that occurs during the switch-off delay, the time is reactivated.

7.1.2 Types 6800-xxx-10x(M) ...

7.1.2.1 Factory setting

This flush-mounted sensor is set to the following values at the factory (handwheels on the back side of the device):

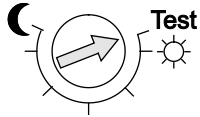


Fig. 11: Response threshold/test

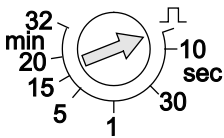


Fig. 12: Time setting/short-time pulse

7.1.2.2 Response threshold

The integrated twilight sensor regulates the response threshold (light sensitivity) from which the detection is activated. Set the response threshold according to the following points:

- "Moon" symbol: activation only at dusk.
- "Sun" symbol: activation at any brightness.
- Position between both symbols: determine a setting by testing until the desired response threshold is reached.
 - Walk back and forth in front of the sensor until the flush-mounted sensor triggers. Stop and remain still until the consumers are switched off. Confirm the test results by walking again if pertinent.
- "Test" position: activates at any brightness since the twilight sensor is deactivated.



Notes

- If the test position is left, the device deactivates after a self-test of one minute or it switches to the set operation mode.
- In case of a strong infrared signal, slight deviations in the switch-off delay may result.
- In case of every new movement in the detection range that occurs during the switch-off delay, the time is reactivated.

7.1.2.3 Switch-off delay

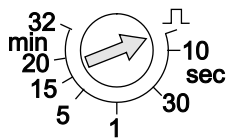


Fig. 13: Time setting

The time element installed in the flush-mounted sensor controls the ON period of activated consumers. This function is necessary, for example, if the frequent use of a corridor prevents a constant activation or deactivation or if standstill times in the detection range should be shunted.

The switch-off delay can be set to a short-time pulse \square of one second in connection with the flush-mounted relay insert 6401U-102 ... for the actuation of door bells, staircase light timer switches, etc. If a switching signal is emitted, an additional switching signal to activated consumers is suppressed for nine seconds even if the flush-mounted sensor has made a new detection.

Select other time values (specified in seconds or minutes after you set the set screw to the desired value (e.g., 15 minutes).

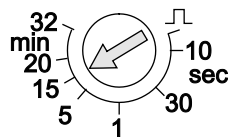


Fig. 14: Time setting 15 minutes



Notes

- In case of a weak time value and a strong infrared signal, slight deviations in the switch-off delay may result.
- In case of every new movement in the detection range that occurs during the switch-off delay, the time is reactivated if the twilight sensor is enabled at first activation.

7.1.2.4 Operation mode

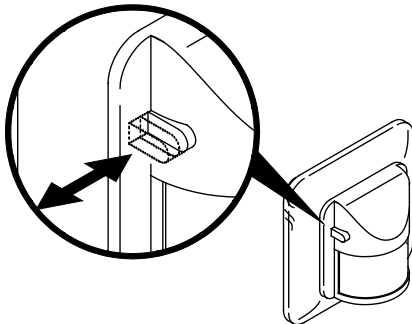


Fig. 15: Operation mode (only 6800-xxx-10x(M) ...)

Switch position	Function
Middle position	Automatic mode – Automatic mode provides the described watchdog functions.
O	Manual mode – OFF = flush-mounted sensor out of order
I	– ON = continuous light activated

7.2 Auxiliary post operation

In connection with flush-mounted sensors, auxiliary post operation is possible via

- separate pushbutton input of the named flush-mounted inserts (not for 6812U-101 ...)
- or
- activation by NC contact button in the power supply (keep pressed for at least one second)
- or
- Auxiliary post insert 6805U ...



Note

- In case of auxiliary post operation using an NO contact button, the maximum length of the auxiliary post line may not exceed 100 m.
- Please use only pushbuttons without contact-parallel illumination.
- In order to avoid disturbances caused by ripple voltage, the switched line must be laid separately from the auxiliary post line.

Active auxiliary post operation using insert 6805U ...

The "active" auxiliary post acts like the main unit. The switch-OFF delays of the main unit and auxiliary post, however, add up.

For the use of 6800-xxx-104 (M) ..., we thus recommend that you set

- the short-time pulse at 6805U ... and
- the desired switch-OFF delay at the main unit

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