



Programmieranleitung

ActiLume wireless 1-10V

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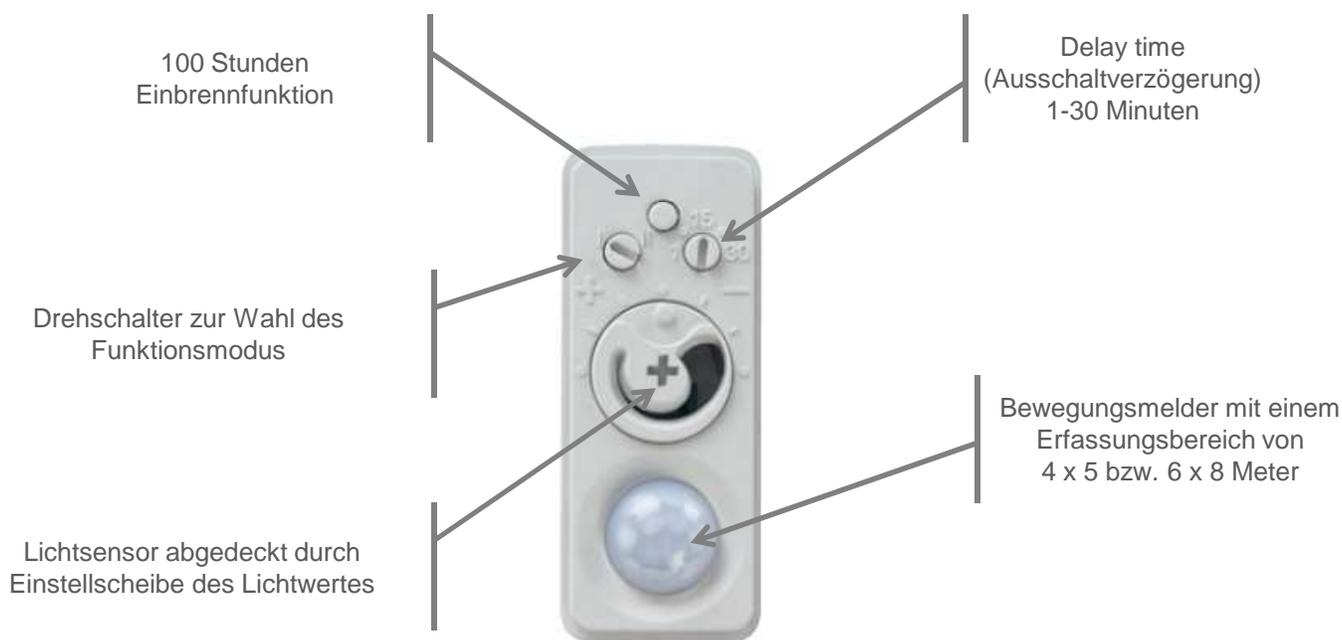
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Einstellungen

Die Einstellung des „ActiLume wireless 1-10Volt“ erfolgt zum einen direkt am Sensor, über zwei integrierte DIP-Schalter an der SwitchBox, sowie über die Bedieneinheit im Funkverbund.

Über den Sensor können folgende Einstellungen getätigt werden:

1. Solllichtwert
2. Abschaltverzögerungszeit (Delay time)
3. Funktionen des Systems
 1. Nur bewegungsabhängig – Einstellung I
 2. Bewegungs- und tageslichtabhängig – Einstellung II
4. Aktivierung des 100 Stunden Einbrennmodus



LRI 1655/00
ActiLume 1-10V Sensor

Einstellungen

In der SwitchBox befinden sich zwei DIP-Schalter, über die der Abschaltwert (DIP-Switch 1) eingestellt werden kann und eine „Prolong time“ (verlängerte Abschaltzeit) aktiviert bzw. deaktiviert werden kann.

Unter „Prolong time“ versteht man eine verlängerte Abschaltzeit von 30 Minuten. Eine genaue Darstellung der „Prolong time“ (verlängerte Abschaltzeit) entnehmen Sie bitte der folgenden Seite.



Folgende Einstellungen können mittels der DIP-Schalter in Kombination mit der Sensoreinstellung „Funktionsmodus“ erfolgen:

		ActiLume wireless 1-10V SwitchBox			
		SW 1 - off SW 2 - off	SW 1 - on SW 2 - off	SW 1 - off SW 2 - on	SW 1 - on SW 2 - on
ActiLume 1-10V Sensor Funktionsmodus	I	PD = Ein PL = 0 Min TL = Aus	PD = Ein PL = 0 Min TL = Aus	PD = Ein PL = 30 Min TL = Aus	PD = Ein PL = 30 Min TL = Aus
	II	PD = Ein TL = Ein AB = 150% PL = 0 Min	PD = Ein TL = Ein AB = 250% PL = 0 Min	PD = Ein TL = Ein AB = 150% PL = 15 Min	PD = Ein TL = Ein AB = 250% PL = 15 Min

PD = Bewegungssensorik

PL = Prolong time (verlängerte Verzögerungszeit) in Minuten

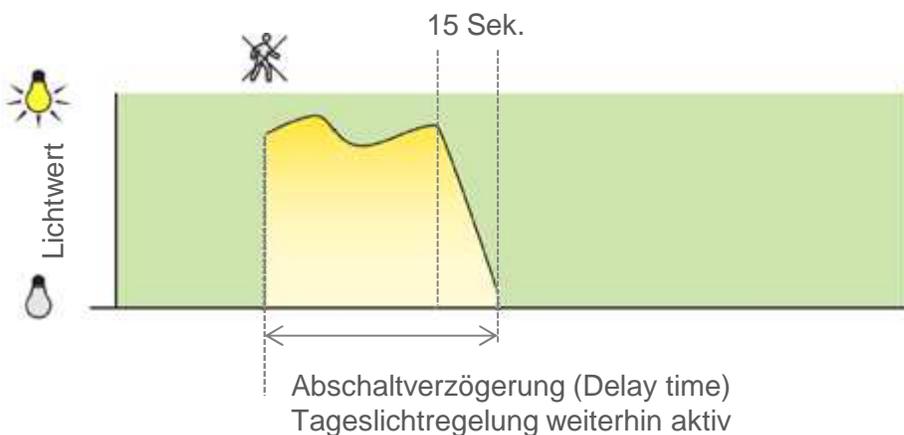
TL = Tageslichtregelung

AB = Abschaltwert

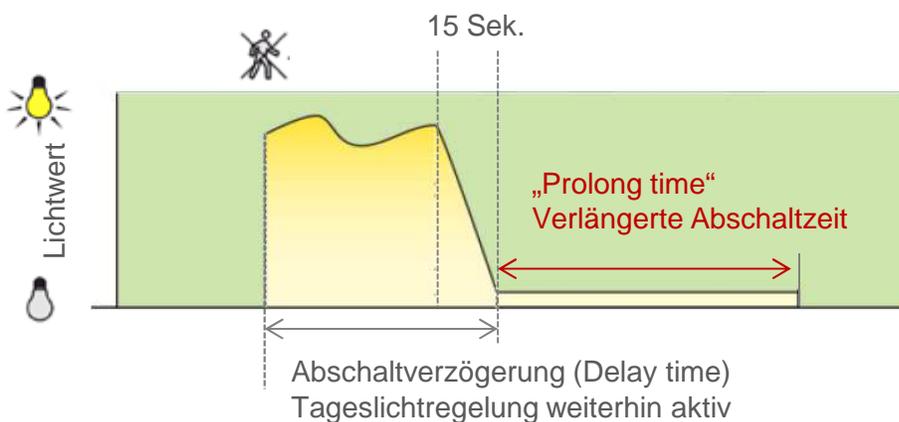
„Prolong time“ (Verlängerte Abschaltzeit)

Unter „Prolong time“ versteht man eine verlängerte Abschaltzeit. Ist die „Prolong time“ (verlängerte Abschaltzeit) aktiviert und es wird keine Person mehr durch den Sensor detektiert, so regelt die Beleuchtung nach der Delay time auf den Minimumwert herunter und bleibt auf diesem Wert für 15 bzw. 30 Minuten je nach Einstellung des DIP-Schalters SW 2. Erst dann wird die Beleuchtung abgeschaltet.

„Prolong time“ (verlängerte Abschaltzeit) **deaktiviert**
DIP Schalter 2 auf „off“ Position



„Prolong time“ **aktiviert**
DIP-Schalter 2 „on“ Position



Allgemeines über die Programmierung

Ohne Programmierung über das Handbediengerät UID 8410/10 arbeitet der Sensor in Kombination mit der SwitchBox als „Single – Lösung“ gemäß den Einstellungen, die am Sensor sowie an der SwitchBox vorgenommen wurden.

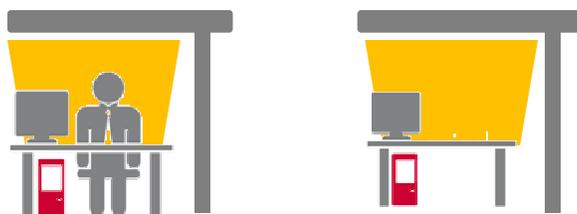
Eine Bedienung über das Handbediengerät UID 8410/10 ist nicht möglich. Bedienungen, die in einem nicht programmierten Zustand über das Handprogrammiergerät erfolgen, werden mit einem negativen Quittierungston bestätigt.

Erfolgte eine Programmierung über das Handprogrammiergerät, so kann das ActiLume wireless 1-10 Volt in zwei Moden betrieben werden:

Modus 1 - Raummodus

Der Raum wird betreten und eine Person wird durch einen Sensor detektiert. Die Leuchte schaltet zu und regelt tageslichtabhängig. Über die SwitchBox wird ein Signal an alle anderen Leuchten in dem Verbund gesendet und diese schalten ebenfalls zu und regeln tageslichtabhängig.

Bei dieser Programmierung befinden sich alle Leuchten in einer Gruppe und führen die gleichen Befehle aus, wenn nur eine Leuchte eine Person detektiert. Man nennt diese Einstellung „Raummodus“.

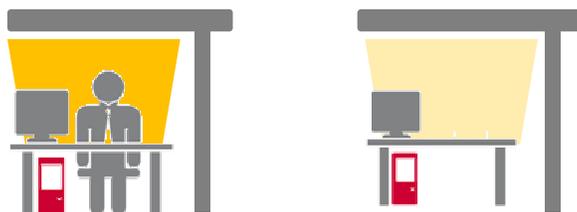


Modus 2 - Zonenmodus

Der Raum wird betreten und eine Person wird durch einen Sensor detektiert. Die Leuchte schaltet zu und regelt tageslichtabhängig. Über die SwitchBox wird ein Signal an alle anderen Leuchten in dem Verbund gesendet und diese schalten ebenfalls zu, regeln aber auf einen abgesenkten Wert (Minimum Wert).

Erst wenn der Sensor in einer Leuchte eine Person detektiert, regelt auch diese tageslichtabhängig.

In dieser Einstellung wurden die Leuchten in Zonen unterteilt. Alle Leuchten, die einer Zone zugeordnet sind, führen die gleichen Befehle aus, sobald eine Leuchte eine Person detektiert hat. Leuchten in einer anderen Zone regeln auf den Minimumwert, sobald eine Zone eine Detektion sendet.



Handbediengerät vorbereiten

Das Handbediengerät UID 8410/10 muss für die Programmierung vorbereitet werden, in dem die Batterien eingelegt werden.

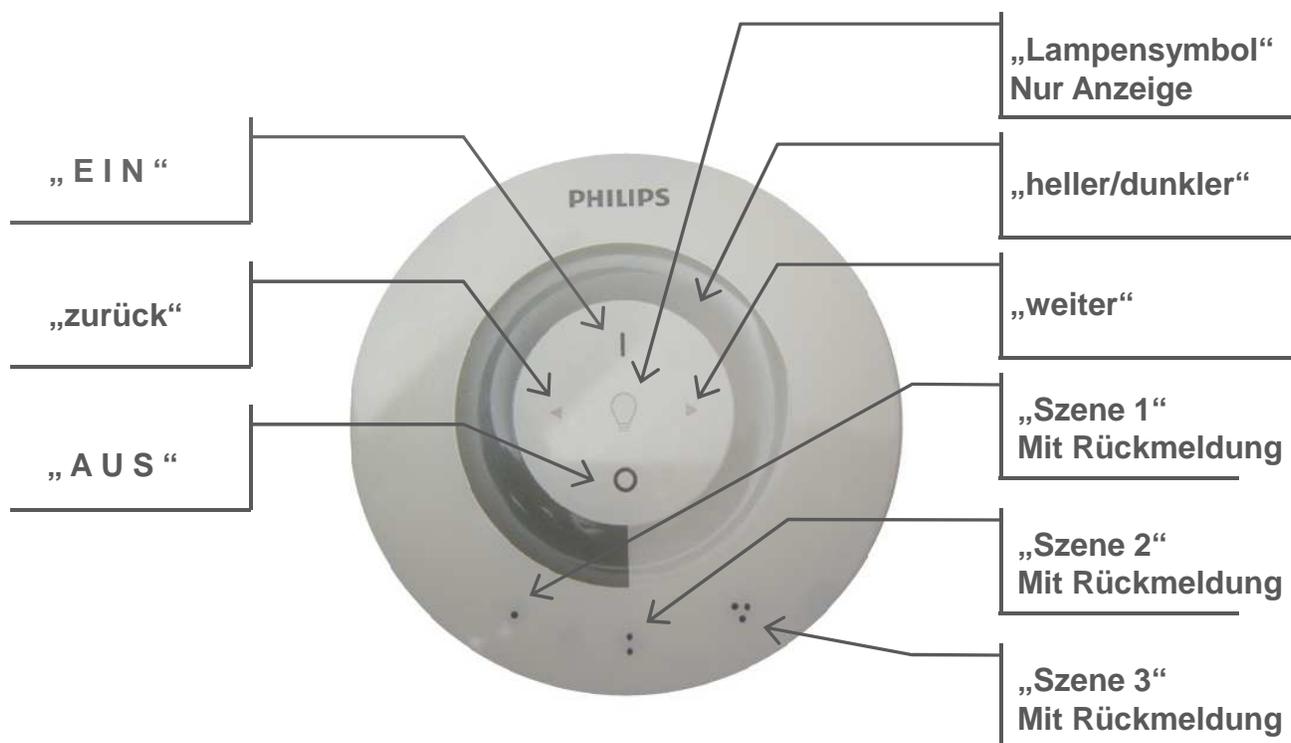
Um das Handbediengerät zu öffnen, muss der Knopf an der Oberseite gedrückt werden und die hintere Schale abgenommen werden.

Legen Sie nun die drei Batterien (AAA) entsprechend den Markierungen (+) und (-) ein.

Sobald die letzte Batterie eingelegt wurde, signalisiert das Handbediengerät die Bereitschaft mit einem Quittierton.

Auf der Vorderseite des Handbediengerätes UID 8410/10 befinden sich einige Tasten mit folgenden Bezeichnungen.

Das Lampensymbol ist eine Kontrollanzeige und keine Bedientaste. Die Szenentasten sind ebenfalls mit einer Kontrollanzeige versehen.

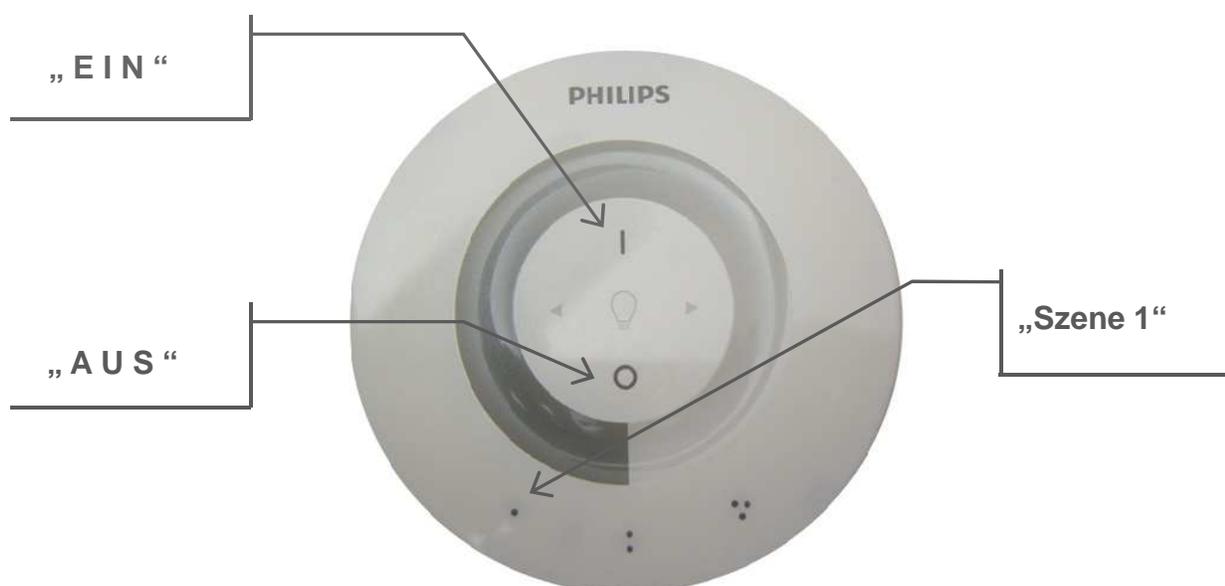


Programmiermodus starten

Um das Handbediengerät in den Programmiermodus zu versetzen, betätigen Sie die Taste „Szene 1“ und die Taste „Ein“ gleichzeitig. Halten Sie diese Tastenkombination gedrückt, bis das Handbediengerät den Start des Programmiermodus mit einem positiven Quitterton bestätigt und „Szene 1“, „Szene 2“ und „Szene 3“ blinken.

Möchten Sie den Programmiermodus verlassen, drücken Sie kurz die „Aus“ Taste.

Erfolgt nach dem Starten des Programmiermodus keine weitere Betätigung, wird dieser nach ca. 30 Sekunden durch das Handprogrammiergerät selbständig beendet.



Programmiermodus starten

„Szene 1“ und „Ein“ gleichzeitig betätigen

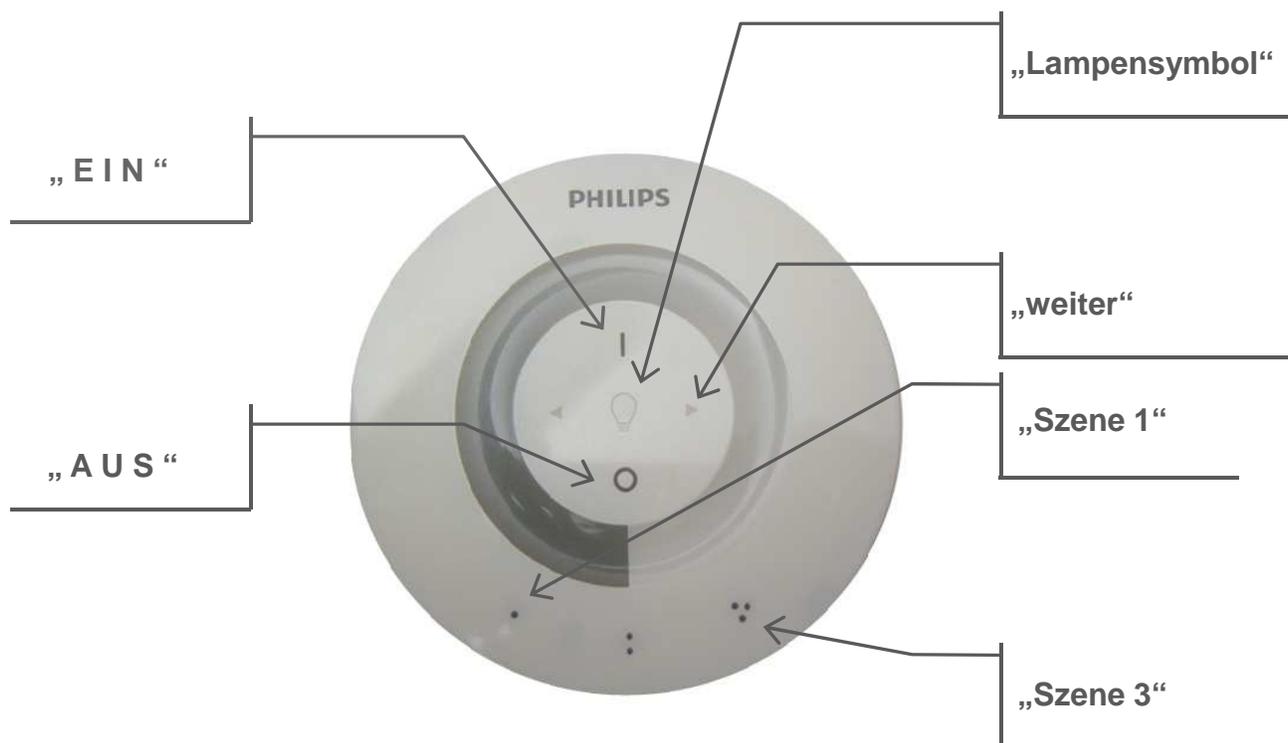
Programmiermodus beenden

1. „Taste „Aus“ kurz betätigen
2. Nach 30 Sekunden wird der Modus selbst beendet

Leuchten suchen

Um die Leuchten über das Handbediengerät bedienen bzw. programmieren zu können, müssen alle Leuchten in den Raummodus aufgenommen werden. Auch wenn Sie später die Leuchte in Zonen unterteilen möchten, müssen grundsätzlich alle Leuchten zunächst in den Raummodus zusammengefasst werden.

Um die in der Nähe befindlichen Leuchte in den Raummodus aufzunehmen, betätigen Sie nach dem Start des Programmiermodus die „Szene 1“ Taste. Wurde diese betätigt, leuchtet die „Szene 1“ Taste und in der Mitte des Handbediengerätes leuchtet das „Lampensymbol“ auf. Das System sucht jetzt die in der Nähe befindlichen Leuchten. Wurde eine Leuchte gefunden, so beginnen „Lampensymbol“ und Leuchte zu blinken.



Programmiermodus starten

„Szene 1“ und „Ein“ gleichzeitig betätigen

Komponenten suchen

Kurz die „Szene 1“ betätigen

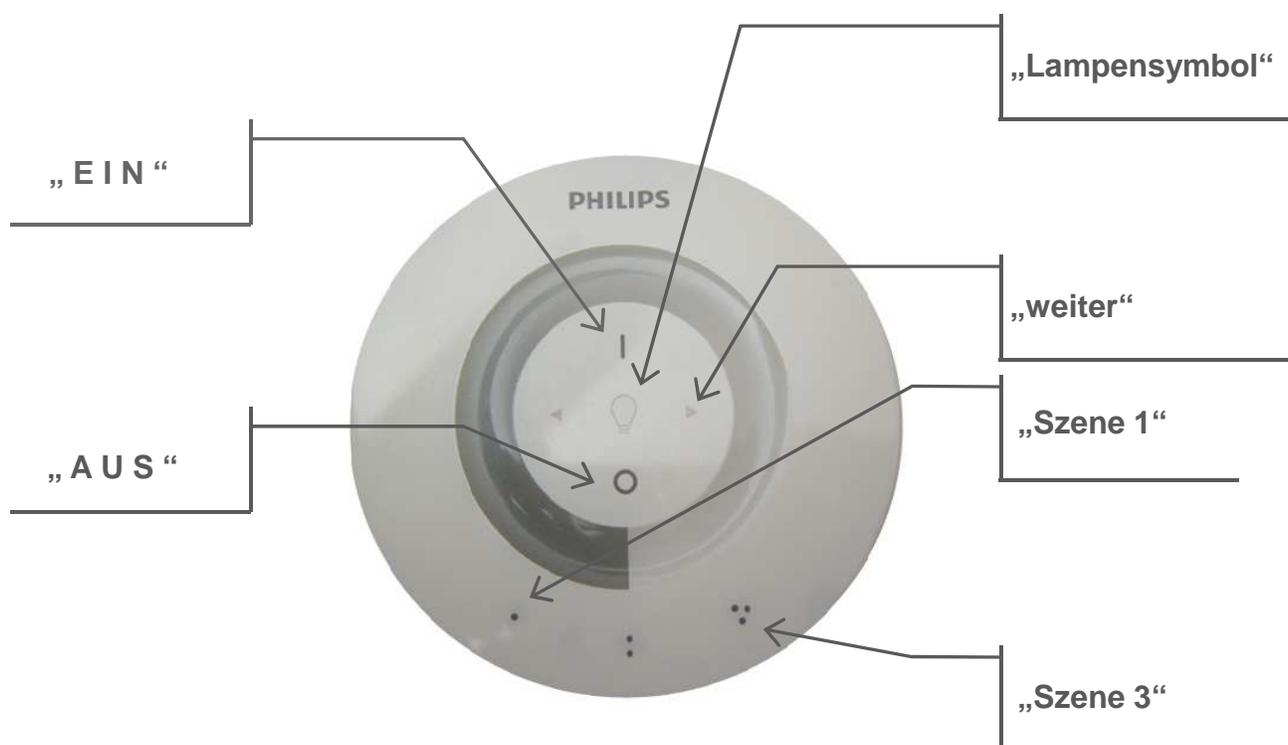
Leuchten aufnehmen

Wurden Leuchten vom System gefunden, so können diese in den Raummodus aufgenommen werden oder sie können ignoriert werden.

Aufnehmen bedeutet, dass die Leuchte in den Funkverbund aufgenommen wird, weil sie alleine oder im Verbund mit anderen Leuchten betrieben werden soll.

Ignorieren heißt, dass die zur Zeit blinkende Leuchte nicht in diesem Verbund enthalten sein soll.

Zum Aufnehmen der Leuchte betätigen Sie, während diese blinkt, die „Ein“ Taste. Das vorher blinkende „Lampensymbol“ beginnt zu leuchten und die Leuchte wird in den Verbund aufgenommen. Ist der Vorgang abgeschlossen, so erfolgt zunächst ein positiver Quittierton. Das „Lampensymbol“ beginnt zu blinken und eine weitere Leuchte, die in den Verbund aufgenommen werden kann, beginnt ebenfalls zu blinken. Diese Leuchte kann mit der „Ein“ Taste in den Verbund aufgenommen werden oder mit der „weiter“ Taste ignoriert werden. Möchten Sie den Vorgang beenden, betätigen Sie die Taste „Szene 3“, hiermit kommen Sie in den Programmiermodus zurück, den Sie mit Betätigung der Taste „Aus“ beenden können. Alle Leuchten, die aufgenommen wurden, lassen sich über das Handbediengerät ansteuern.



Programmiermodus starten

Leuchten suchen

Leuchte aufnehmen

Leuchte ignorieren

„Szene 1“ und „Ein“ gleichzeitig betätigen

Kurz die „Szene 1“ betätigen

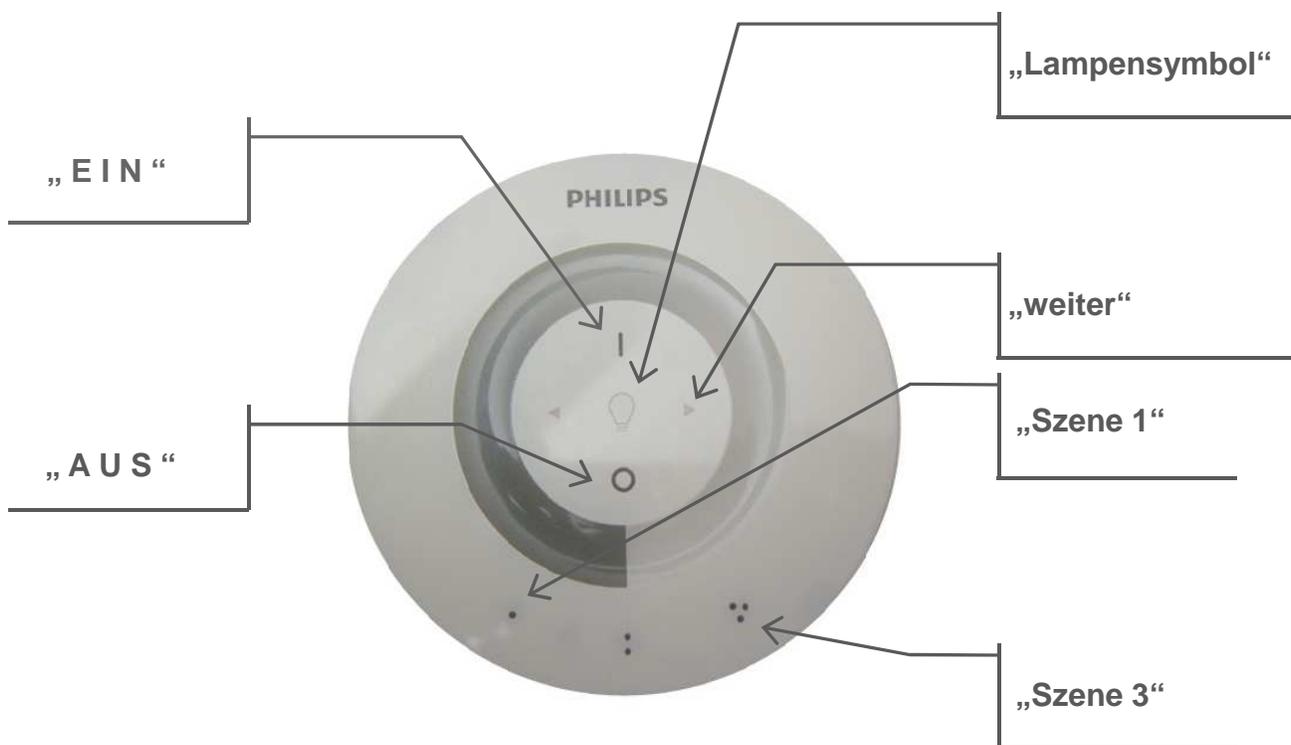
Betätigen Sie die Taste „Ein“

Betätigen Sie die Taste „weiter“

OccuSwitch Aktor aufnehmen



In einem ActiLume wireless 1-10V können ebenfalls OccuSwitch Aktoren für schaltbare Verbraucher aufgenommen werden. Hierzu versetzen Sie das System in den Programmiermodus, und betätigen Sie dann die Taste „Szene 1“. Das „Lampensymbol“ und die Rückmeldung der „Taste 1“ beginnt zu blinken. Betätigen Sie nun die Taste „weiter“, bis die rote LED sowie die angeschlossenen Verbraucher an dem OccuSwitch Aktor beginnen zu blinken. Um das Modul aufzunehmen, betätigen Sie die Taste „Ein“. Um es zu ignorieren, betätigen Sie die Taste „weiter“, um an die nächste Komponente zu gelangen. Möchten Sie nach der Aufnahme den Programmiermodus verlassen, betätigen Sie die Taste „Szene 3“ und anschließend die Taste „Aus“.



Programmiermodus starten

OccuSwitch Aktor suchen

OccuSwitch Aktor aufnehmen

OccuSwitch Aktor ignorieren

„Szene 1“ und „Ein“ gleichzeitig betätigen

Kurz die „Szene 1“ betätigen

Betätigen Sie die Taste „Ein“

Betätigen Sie die Taste „weiter“

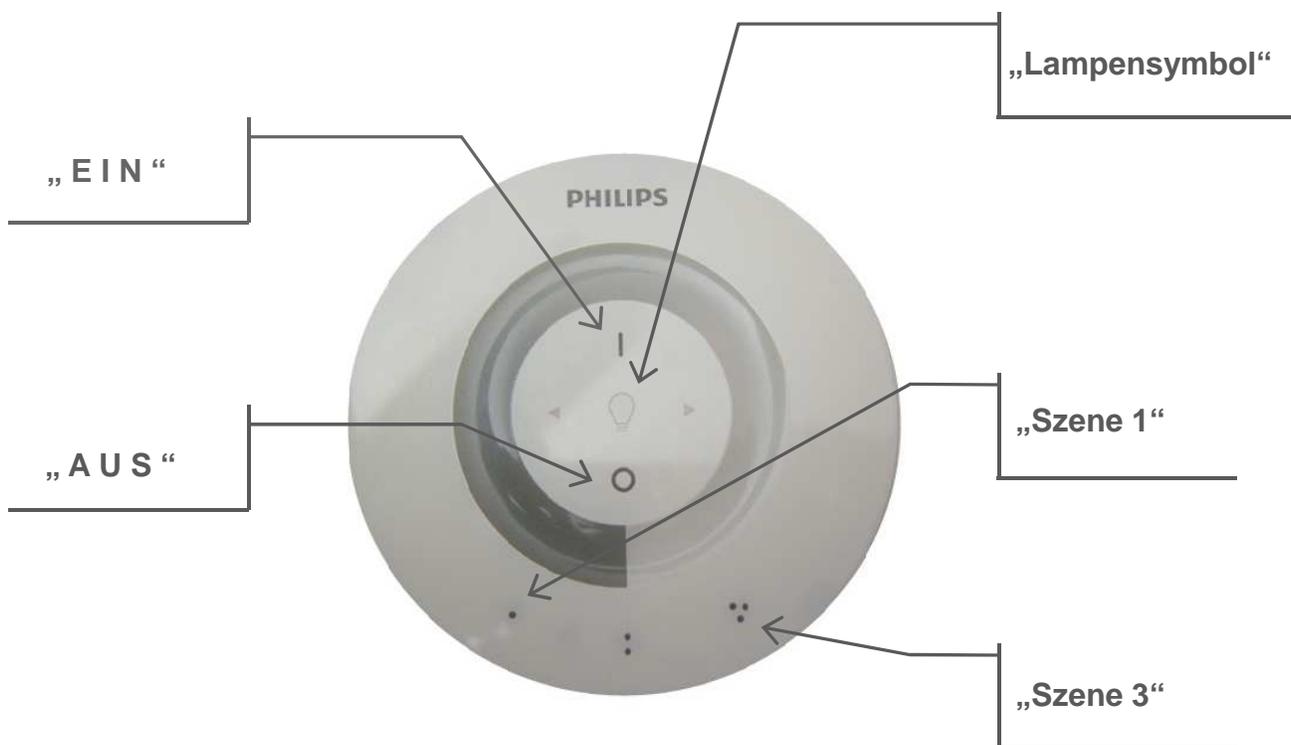
Aufnahme zusätzlicher Sensoren



Um Erfassungsbereiche zu vergrößern, besteht die Möglichkeit, zusätzliche Bewegungssensoren in einen Funkverbund mit aufzunehmen.

Hierzu versetzen Sie das System in den Programmiermodus und betätigen an den Sensoren die „Link“ Taste. Danach betätigen Sie die Taste „Szene 1“ am Handsender. Das „Lampensymbol“ und die Taste „Szene 1“ beginnen zu blinken. Wenn der Sensor erfolgreich in den Funkverbund aufgenommen wurde, so beginnt in dem zusätzlichen Sensor die grüne LED zu blinken. Im Handsender blinkt das „Lampensymbol und die Taste „Szene 1“.

Um den Programmiermodus zu beenden, betätigen Sie die Taste „Szene 3“ und anschließend die Taste „Aus“.



Programmiermodus starten

Zusätzlicher Sensor auswählen

Zusätzlicher Sensor aufnehmen

„Szene 1“ und „Ein“ gleichzeitig betätigen

Betätigen Sie die „Link“ Taste am zusätzlichen Sensor

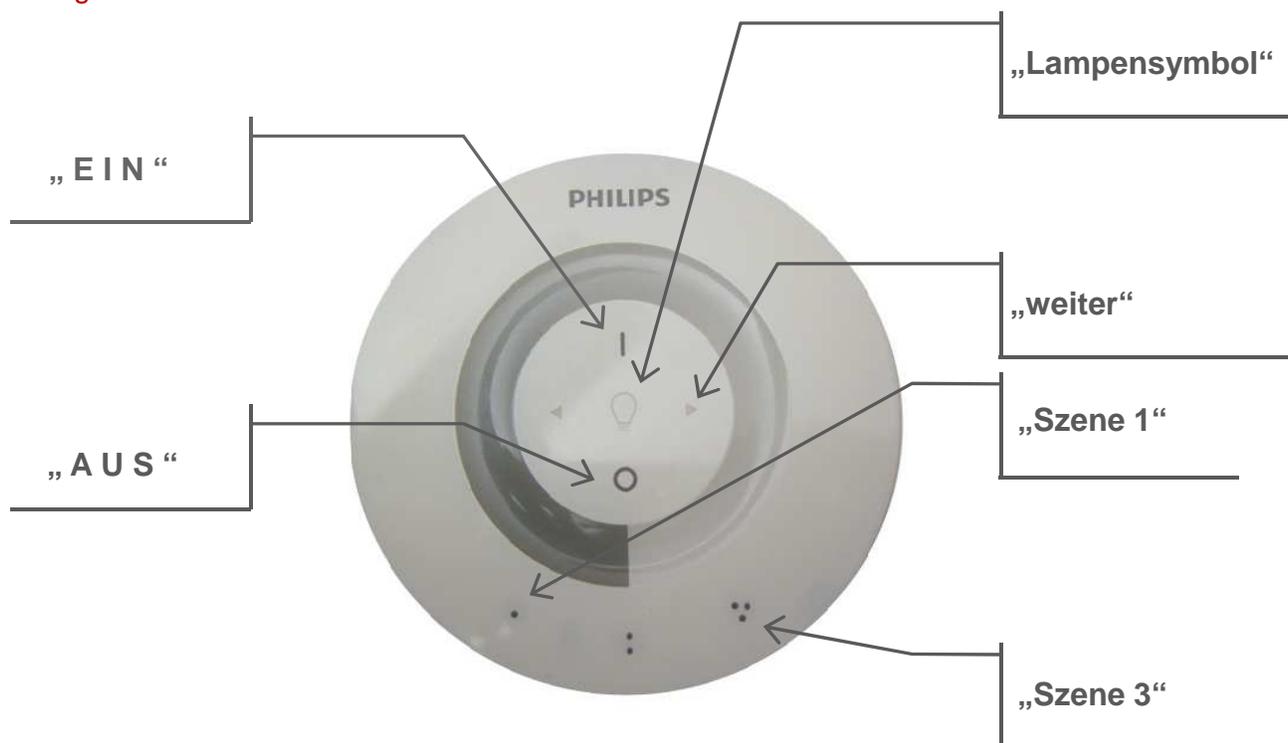
„Szene 1“ Taste betätigen

Leuchten entfernen – Resetfunktion

Möchten Sie eine bereits aufgenommene Leuchte entfernen, so starten Sie den Programmiermodus und betätigen Sie die Taste „Szene 1“. Die erste erkannte Leuchte beginnt zu blinken. Soll diese Leuchte entfernt werden, so betätigen Sie die Taste „Aus“, halten diese gedrückt, bis das „Lampensymbol“ leuchtet. Wurde die Leuchte aus dem Verbund gelöscht, wird dies durch einen positiven Quittierton bestätigt und das „Lampensymbol“ beginnt erneut an zu blinken. Nun beginnt die nächste Leuchte, die sich in diesem Verbund befindet, zu blinken. Gelöscht wird diese ebenfalls durch Betätigung der Taste „Aus“. Ignoriert wird diese durch Betätigung der Taste „weiter“, um zur nächsten Leuchte zu gelangen.

Möchten Sie diesen Vorgang beenden, betätigen Sie die Taste „Szene 3“. Sie kommen so zurück in den Programmiermodus, den Sie mit der Taste „Aus“ beenden können.

Wurde ein Reset durchgeführt, sind alle zuvor programmierten Funktionen unwiderruflich gelöscht.



Programmiermodus starten

Leuchten suchen

Leuchte aufnehmen

Leuchte ignorieren

Leuchte löschen

„Szene 1“ und „Ein“ gleichzeitig betätigen

Kurz die „Szene 1“ betätigen

Betätigen Sie die Taste „Ein“ kurz

Betätigen Sie die Taste „weiter“

Taste „Aus“ drücken und gedrückt halten

Raumzone bilden

Möchten Sie eine Leuchte in eine Raumzone aufnehmen, so muss diese zunächst im Raummodus aufgenommen sein (siehe hierzu „Leuchte aufnehmen“).

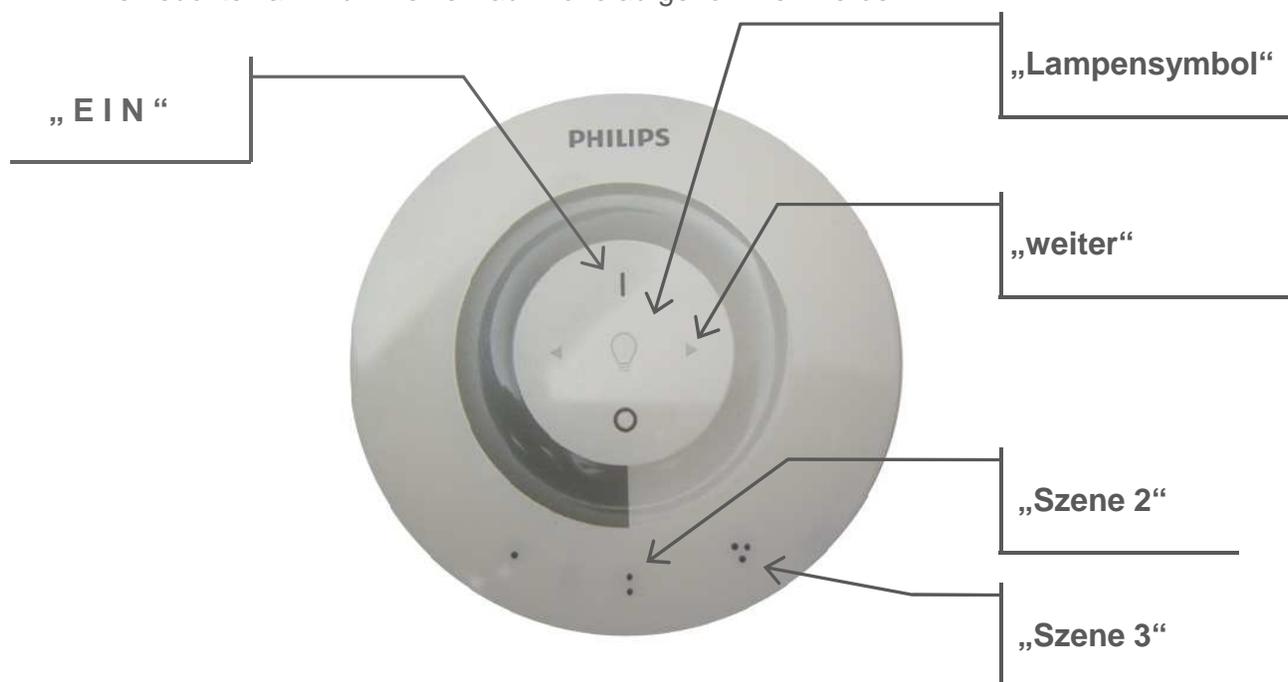
Starten Sie den Programmiermodus, in dem Sie die Taste „Szene 1“ und „Ein“ gleichzeitig drücken und gedrückt halten.

Betätigen Sie nun die Taste „Szene 2“. Die Taste „Szene 2“ leuchtet und das „Lampensymbol“ blinkt.

Sie haben nun die erste Zone von insgesamt 16 Zonen geöffnet. Gleichzeitig wird die erste Leuchte blinken. Möchten Sie diese aufnehmen, so betätigen Sie die „Ein“ Taste. Das „Lampensymbol“ leuchtet und die Leuchte wird in die entsprechende Zone integriert. Ist das geschehen, so wird Ihnen der Vorgang durch einen positiven Quittierton bestätigt, das „Lampensymbol“ blinkt und die nächste Leuchte wird anfangen zu blinken.

Möchten Sie diese Leuchte ebenfalls in diese Zone aufnehmen, so verfahren Sie wie zuvor beschrieben. Möchten Sie diese Leuchte ignorieren, betätigen Sie die Taste „weiter“ oder möchten Sie eine neue Raumzone eröffnen, betätigen Sie erneut die Taste „Szene 2“ und nehmen die entsprechenden Leuchten drin auf.

Eine Leuchte kann nur in eine Raumzone aufgenommen werden.



Programmiermodus starten

„Szene 1“ und „Ein“ gleichzeitig betätigen

Zone 1 öffnen

„Szene 2“ betätigen

Leuchte aufnehmen

Betätigen Sie die Taste „Ein“

Leuchte ignorieren

Betätigen Sie die Taste „weiter“

Neue Zone öffnen

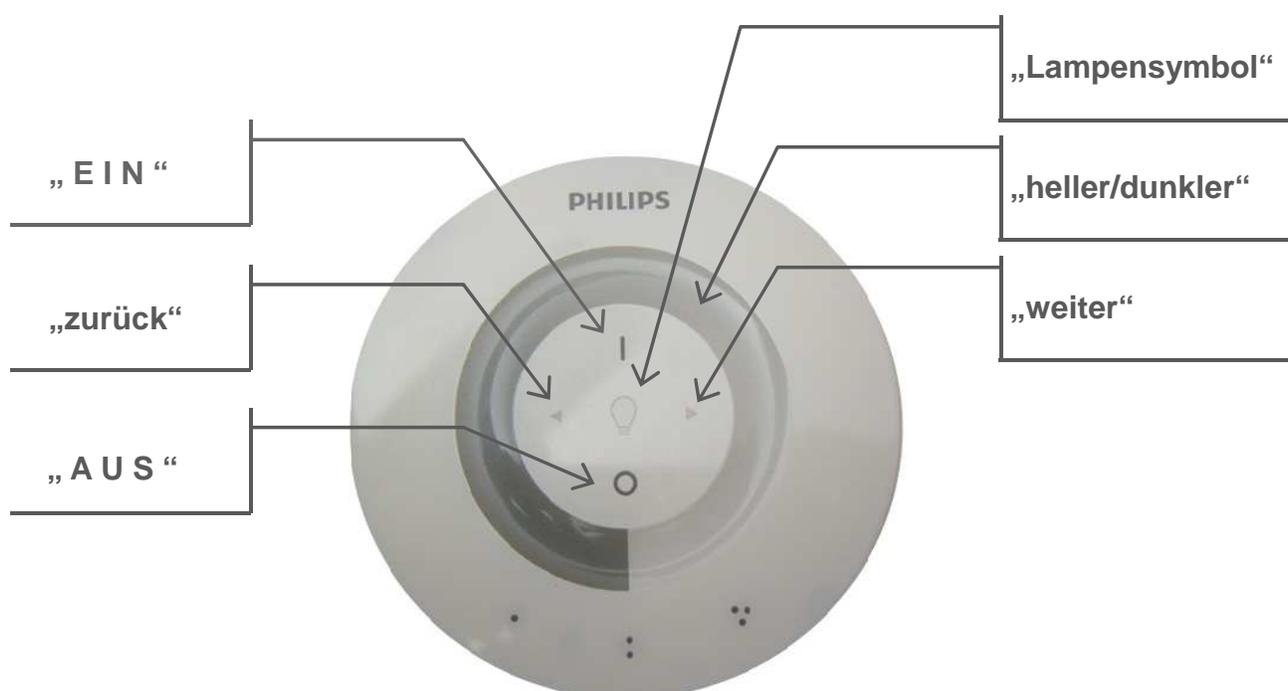
Betätigen Sie die Taste „Szene 2“ erneut

Raumzonen ansprechen

Wurden alle Leuchten aufgenommen und entsprechend den Raumzonen zugeordnet, so kann über das Handbediengerät alle Zonen gleichzeitig bzw. jede Zone einzeln angesprochen werden. Dazu betätigen Sie die Taste „weiter“ und halten diese für ca. 3 Sekunden gedrückt. Auf dem Handbediengerät leuchtet das „Lampensymbol“ auf und die erste bzw. alle Zonen fangen an zu blinken.

Um anzuzeigen, welche Zone Sie selektiert haben, blinkt diese vier Mal. Nach dem Blinken können Sie die Zone über das Handbediengerät ansprechen.

Möchten Sie diese Zone nicht bedienen, betätigen Sie die „weiter“ Taste und die nächste Zone fängt zu blinken.



Zonenbedienung eröffnen

Taste „weiter“ für drei Sekunden gedrückt halten

Erste Zone blinkt

Mit den Tasten kann die Zone wie gewünscht bedient werden

Um die nächste Zone zu wählen

Taste „weiter“ drücken und die nächste Zone blinkt

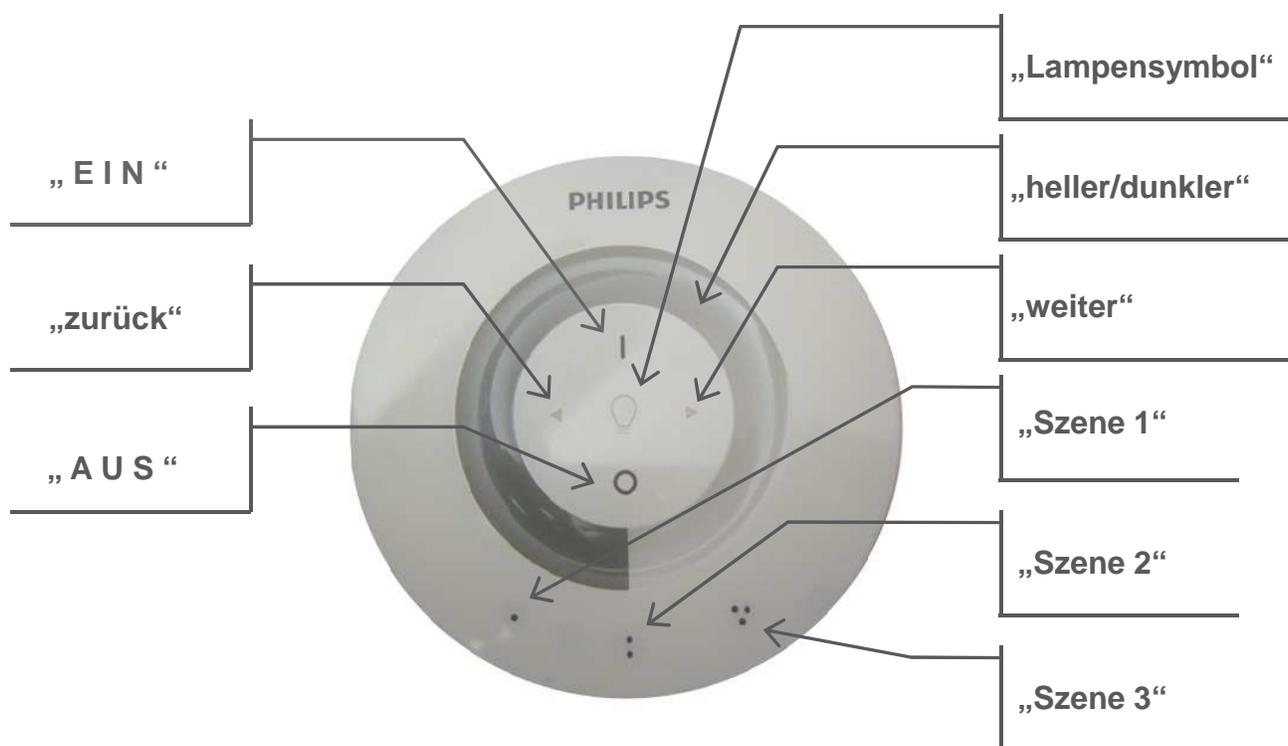
Szenen - programmieren und aufrufen

Über das Handprogrammiergerät können favorisierte Szenen bzw. Lichtwerte eingestellt und programmiert werden.

Zum Einstellen wählen Sie die Zone bzw. alle Zonen aus und stellen den entsprechenden Lichtwert ein.

Zum Abspeichern der Einstellung betätigen Sie die Szenentaste und halten diese gedrückt, bis ein positiver Quittierton zu hören ist. Die Rückmeldung leuchtet und die Szene wurde entsprechend der momentanen Einstellung gespeichert.

Zum Abrufen der Szenen betätigen Sie die gewünschte Szenentaste. Die Rückmeldung wird für ca. 10 Sekunden leuchten und der programmierte Lichtwert wird eingestellt.



Lichtwerte einstellen

Zonen wählen und gewünschte Lichtwerte einstellen

Szene programmieren

Drücken Sie die Szenentaste und halten Sie diese gedrückt, bis die Speicherung durch positiven Quittierton bestätigt wird.

Szene abrufen

Betätigen Sie die Szenentaste kurz.

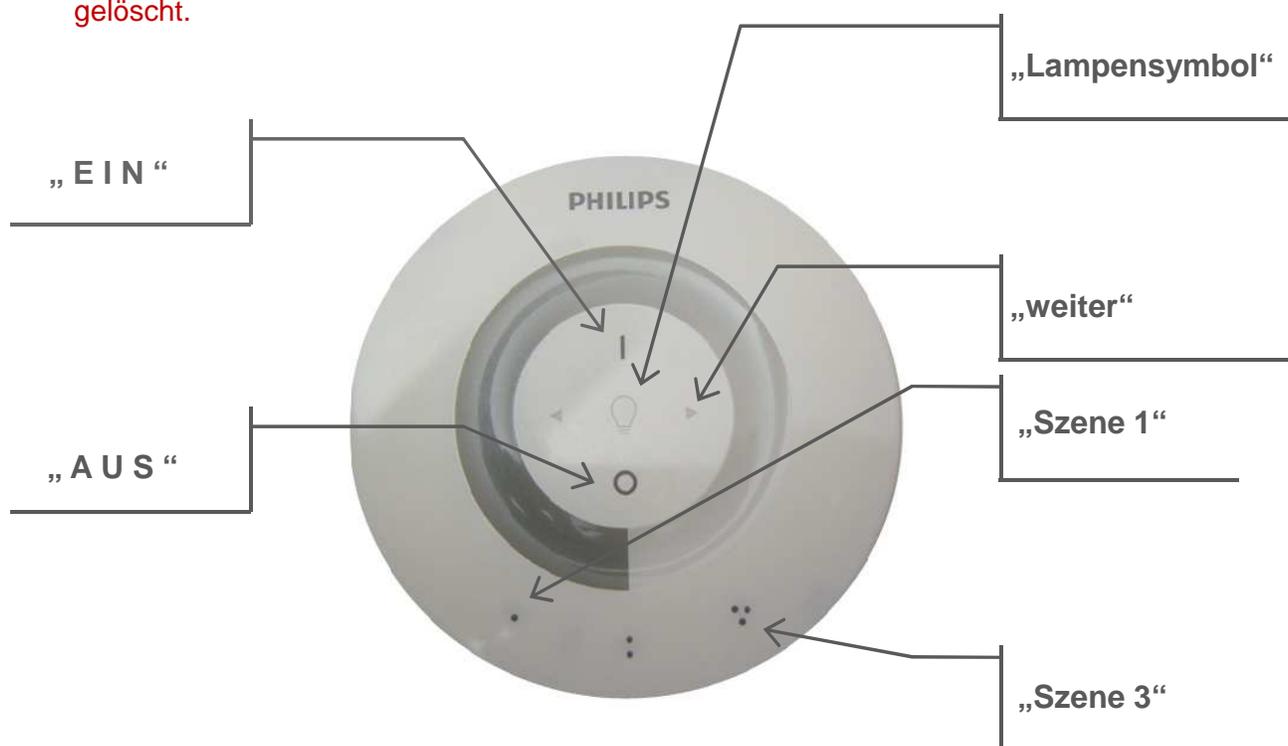
Einstellung in der SwitchBox löschen - Resetfunktion

Soll eine Leuchte aus einem Verbund herausgenommen werden, so empfiehlt es sich bei der gewählten Einheit einen Reset durchzuführen.

Hierzu versetzen Sie das System in den Programmiermodus und betätigen dann die Taste „Szene 1“. Wählen Sie nun die Leuchte, die entfernt werden soll, indem Sie auf die „weiter“ Taste drücken, bis diese blinkt. Blinkt nun die Leuchte, so betätigen Sie die „Aus“ Taste und halten diese gedrückt, bis Sie einen positiven Quittierton hören. Die Leuchte regelt dann auf den Minimumwert, was ein erfolgreichen Reset quittiert.

Erfolgt ein negativer Quittierton, wurde dieser Vorgang abgebrochen und es wurde kein Reset durchgeführt.

Wurde ein Reset durchgeführt, sind alle zuvor gespeicherten Informationen unwiderruflich gelöscht.



Programmiermodus starten

„Szene 1“ und „Ein“ gleichzeitig drücken

Resetfunktion starten

„Szene 1“ drücken

Leuchte aussuchen

Mit „weiter“ die Leuchte suchen, bis sie blinkt

Reset durchführen

Taste „Aus“ drücken, gedrückt halten, bis positiver Quittierton gesendet wird und die Leuchte auf Minimumwert regelt.

Resetfunktion des Handbedienteils

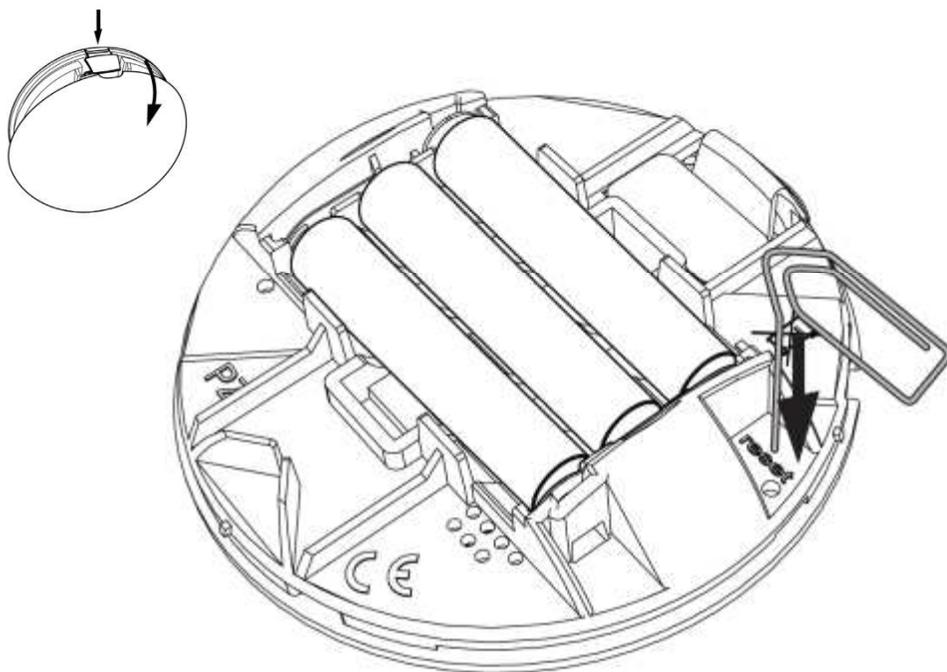
Soll ein Handbediengerät aus einer Anlage entfernt werden muss ebenfalls ein Reset durchgeführt werden.

Dazu öffnen Sie das Handbediengerät, in dem Sie den Knopf auf der Oberseite drücken und die hintere Halbschale abnehmen.

Hinter einem kleinen Loch (rechts neben oberer Batterie) befindet sich ein Resettaster, der mit einem spitzen Gegenstand (Büroklammer) betätigt werden kann.

Drücken Sie diesen und halten Sie diesen für 3 Sekunden gedrückt. Wird der Taster losgelassen, bestätigt der Handsendender den Reset mit einem positiven Quittierton.

Wurde ein Reset durchgeführt, sind alle zuvor gespeicherten Informationen unwiderruflich gelöscht.



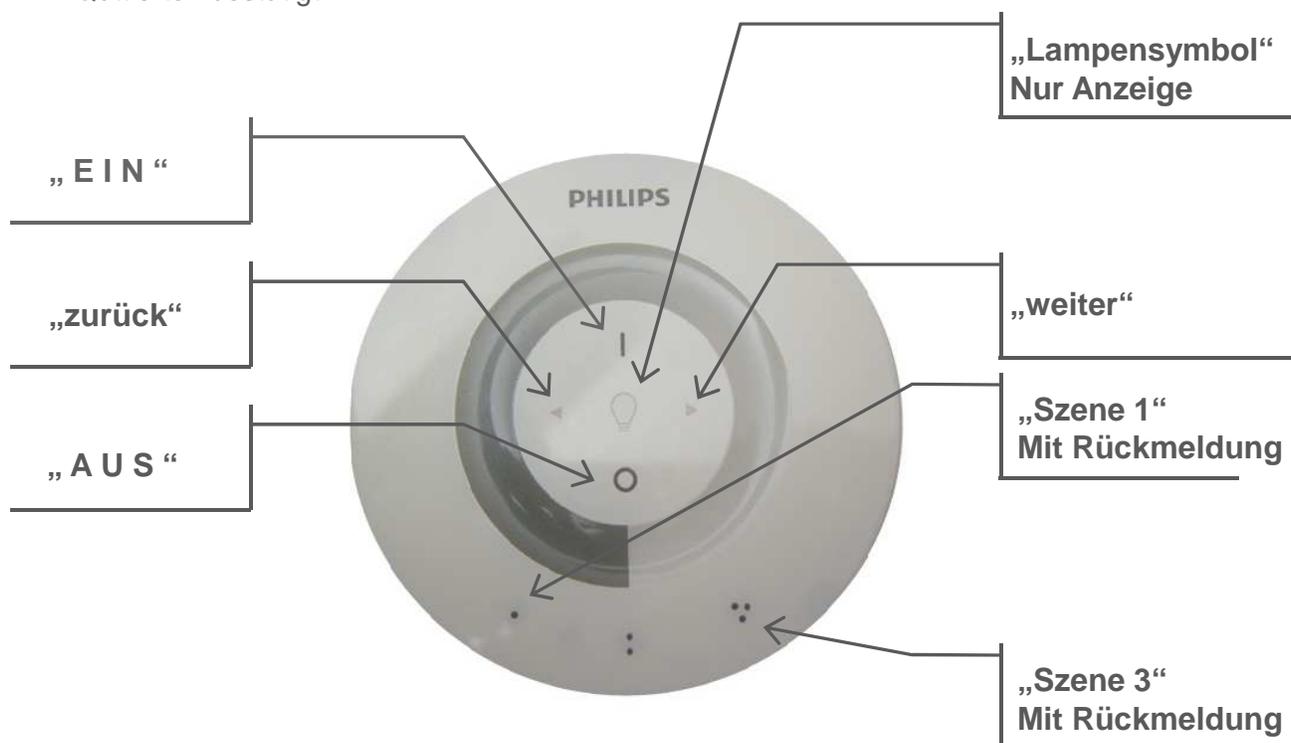
Löschen bzw. Zurückführen eines Handsenders aus bzw. in eine Funkverbindung

Wurde ein kompletter Verbund programmiert, der aber ohne Handsender betrieben werden soll, so muss der Handsender aus diesem Funkverbund entfernt (gelöscht) werden. Um den Handsender aus einem Funkverbund zu entfernen, führen Sie einen Reset wie auf Seite 15 beschrieben durch.

Möchten Sie den Handsender wieder in einen Funkverbund aufnehmen, so gehen Sie wie folgt vor:

Versetzen Sie das System in den Programmiermodus, in dem Sie die Taste „Szene 1“ und die Taste „Ein“ drücken und gedrückt halten, bis ein positiver Quittierton zu hören ist und die Tasten „Szene1“, „Szene2“ und „Szene 3“ blinken.

Betätigen Sie dann die Taste „Szene1“. Nun wird eine im Funkverbund befindliche Leuchte anfangen zu blinken. Blinkt keine Leuchte sondern nur das „Lampensymbol“, so betätigen Sie die Taste „weiter“, bis eine Leuchte im Funkverbund anfängt zu blinken, der Sie das Handbediengerät zuordnen möchten. Nun betätigen Sie die Taste „Ein“ für 10 Sekunden. Die Bestätigung, dass das Handbediengerät aufgenommen wurde, wird mit einem positiven Quittierton bestätigt.



Befehlsübersicht

Programmierschritt	Tastenbetätigung	Rückmeldung Bediengerät	Rückmeldung Leuchten	Bemerkung
Programmiermodus starten	„Szene 1“ + „Ein“ gleichzeitig drücken und gedrückt halten	„Szene 1“, „Szene 2“ und „Szene 3“ blinken		
Leuchten suchen	Programmiermodus starten			
	„Szene 1“	Leuchensymbol leuchtet „Szene 1“ leuchtet		
Leuchten aufnehmen	Programmiermodus starten Taste „Szene 1“ kurz betätigen Leuchten mit „weiter“ Taste wählen Selektierte Leuchte blinkt			
	„Ein“, wenn ausgewählte Leuchte blinkt		Aufgenommen Leuchte leuchtet	
Raumzone bilden	Programmiermodus starten Taste „Szene 2“ kurz betätigen Leuchte mit „weiter“ auswählen			
	Selektierte Leuchte mit Taste „Ein“ in die Raumzone aufnehmen.			Es können maximal 16 Raumzonen gebildet werden. Jede Leuchte kann nur in einer Raumzone abgelegt werden.
Raumzonen ansprechen	Taste „weiter“ drücken und gedrückt halten	Leuchensymbol leuchtet	Ausgewählte Zone blinkt	Die Zone kann jetzt mit den gew. Funktionen bedient werden

Übersicht der Programmierbefehle

Programmierschritt	Tastenbetätigung	Rückmeldung Bediengerät	Rückmeldung Leuchten	Bemerkung
Szene speichern	Taste „weiter“ drücken und gedrückt halten bis Lampensymbol leuchtet. Gewünschte Zone aussuchen durch drücken der „weiter“ Taste Gewünschte Zone blinkt Einstellung tätigen			
	Gew. Szenen Taste drücken und gedrückt halten	Die Szenentaste auf der die Speicherung vorgenommen wurde blinkt.		
Szene abrufen	Gew. Szenentaste drücken	Rückmeldung in der Szenentaste leuchtet	Leuchten steuern auf den programmierten Wert.	
Herausnehmen einer Komponente (Leuchte) aus einer Raumzone	Programmiermodus starten Taste „Szene 1“ drücken Leuchte mit der Taste „weiter“ auswählen			
	Taste „Aus“ drücken und gedrückt halten	„Lampensymbol“ und „Szene 1“ leuchtet	Reset wird durch 100% Licht bestätigt	
Reset des Handbediengerätes	Resettaste im Batteriefach betätigen und gedrückt halten	Nach 3 Sekunden wurde das Handbediengerät resettet		
Zurückführen eines Handsenders in einen programmierten Funkverbudn	Programmiermodus starten Taste „Szene 1“ drücken Taste „weiter“ bis Leuchte blinkt, in dessen Verbund der Handsender aufgenommen werden soll.			
	Taste „Ein“ für 10 Sekunden gedrückt halten			

Kontakt

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Änderungen und Druckfehler behalten wir uns vor.



ActiLume Wireless 1-10V

OEM application guide

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I What is the ActiLume Wireless I-10V System

The ActiLume Wireless I-10V System is a new easy to install and easy to use luminaire based control solution. It is suitable for offices, schools, etc. and offers maximum comfort and automatic energy/CO2 savings. The system can switch the artificial lights in an office automatically on and off based on occupancy and dims the luminaires (artificial lights) when enough daylight (natural light) enters the room.

Although the ActiLume Wireless I-10V system is intended to be used as an easy to install system, some commissioning will always be needed. Commissioning is done by means of a small screwdriver for adjusting the light level and/or the timing. This will set the artificial light according to the designer's requested light level, switch the controller off or dim the light after a certain period of time. By means of the remote control a network (room) can be created and scenes can be created and selected or a specific light level can be set.

The ActiLume Wireless I-10V system consists of a sensor (which can also be used standalone device in conjunction with a HF-Regulator ballast or other I-10V devices) and a control unit (Wireless SwitchBox) designed to be built into a luminaire. The sensor contains two functions - a light sensor for daylight dependent *light level regulation* and a movement detector for *occupancy control*. The lighting can also be controlled manually by a wired switch with a momentary contact (Touch and Dim). The system is operated with Philips HF-REGULATOR (I-10V) dimmable electronic ballasts. Moreover, the light output of the luminaire is already pre-defined according to the setting of the diaphragm on the sensor.

The ActiLume Wireless I-10V system is a lighting control system. The luminaires are connected and mounted in the ceiling. Via rotating the diaphragm the required light level can be adjusted. This setting is then easily copied to the other luminaires in order to have a similar setting. The system is now ready for use. With the commissioning procedure as described in this document, several devices can be linked together so they will act as one system.

As the system's name already implies, it can also be controlled via a secured radio connection which makes use of the ZigBee protocol (2.4GHz, 2007/ZigBee PRO), via a special remote controller. With this controller special features can be unlocked such as "occupancy sharing", connecting various ZigBee devices (up to 16 devices) from this family together into one network (room) which can be split-up, into a maximum of 16 zones. Note that encrypted commands are used for communication between the different Philips devices.



LLC1681/10 ActiLume Wireless I-10V SwitchBox



UID8410/10 Wireless Scene Remote



LRM1763/10 OS Wireless Multi Sensor



LRI1655/00 ActiLume I-10V



LRA1750/10 Wireless Universal Actuator

2 System characteristics

The basic ActiLume Wireless I-10V system consists of the following components:

- ActiLume I-10V Sensor (LRI1655/00)
- ActiLume Wireless I-10V SwitchBox (LLC1681/10)
- Wireless hand held remote control unit (UID8410/10)

The ActiLume Wireless I-10V system can be used in 2 different configurations:

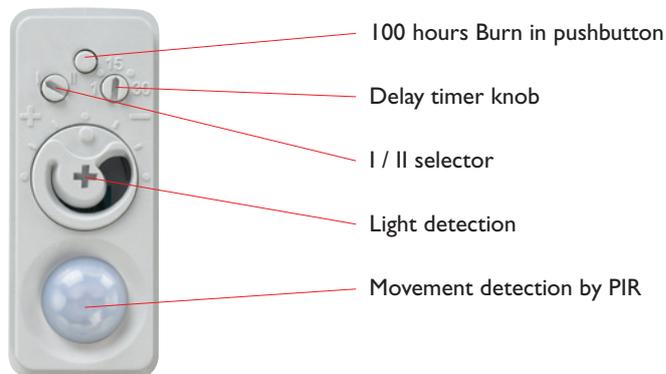
- An ActiLume I-10V Sensor in combination with a I-10V HF-Regulator or other I-10V devices
- An ActiLume I-10V Sensor + an ActiLume Wireless I-10V SwitchBox in combination with a I-10V HF-Regulator ballast or other I-10V devices

Both options will be explained further in the next chapters. The remote control can be used only when the ActiLume Wireless I-10V SwitchBox is being used.

2.1 ActiLume I-10V Sensor LRI 1655/00

The ActiLume I-10V Sensor has 5 functional devices installed in one housing and can be connected to a I-10V HF-Regulator ballast or to the ActiLume Wireless I-10V SwitchBox by means of 2 flying leads.

The functions are:

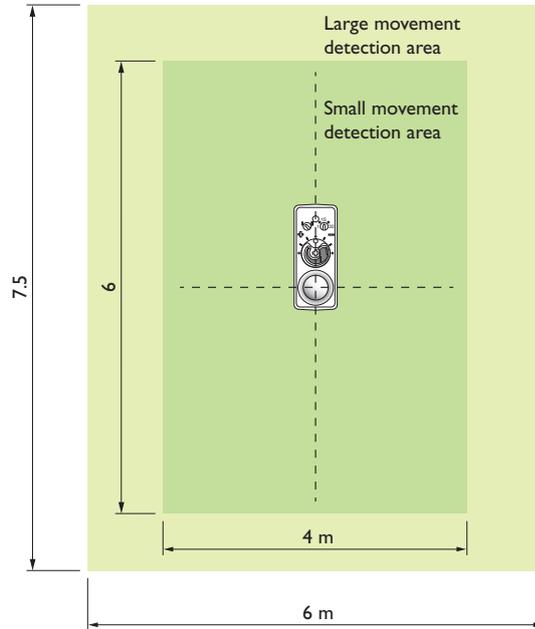


The application area of the ActiLume I-10V is typically an indoor environment (applications such as offices, corridors and open plan offices) in normally heated and ventilated areas. The ActiLume I-10V Sensor has no protection against aggressive chemicals or water (pollution degree 2). The sensor is normally mounted into a Class I luminaire and is optimized for a mounting height of 2.5 to 3 meters. The mounting height can reach up to 3.5 meters but the sensitivity of the PIR sensor as well as the light sensor will change accordingly.

2.1.1 Movement detector



The movement sensor is a PIR (Passive Infra-Red) sensor that detects occupancy with an X-Y cross-area under an angle of $X = 81^\circ$ and $Y = 95^\circ$. When installed in a typical office ceiling at 2.5 meter height, it is sensitive to small movements within a 4 by 6 meter area. It will cover small movements down to a few centimeters at the task area of a desk and is sensitive to large movements within a range of 6 by 7.5 meters. See also figure below.



Though the sensor has a radial reach of 5 meters, the absolute maximum recommended height to place the sensor in the ceiling is 3.5 meters to assure movement coverage and detection.

The PIR sensor reacts to movement by means of a temperature difference like the human body temperature versus its surrounding temperature. A car that just starts its engine is not seen by the PIR, nor does it see people sitting within the car or a forklift truck. Therefore it is recommended not to use the ActiLume Wireless I-10V system for outdoor, parking or industrial applications without sufficient protection against environmental influences like moisture, vermin, etc..

When the ActiLume I-10V system (with or without Wireless SwitchBox) is hard-switched or if the power supply is interrupted, the ActiLume I-10V movement sensor requires a circuit stability time of 15 to 30 seconds after switching on of the mains. During this stabilizing period the luminaires are in their default setting (factory setting is ON). This is to avoid darkness in the rooms after a power interruption. This behavior is called "power-up-state". The "power-up-state" cannot be changed.

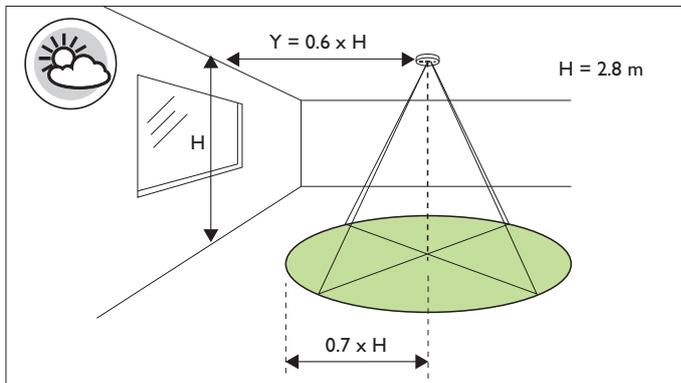
2.1.2 Light sensor



The daylight sensor is a Light Diode sensor that reads the actual average luminance in Candela per m² captured under an angle of approximately 62°. The intensity of the luminance depends on the amount of artificial and/or natural light supply in the office as well as how well this light is reflected towards the ceiling. The light reflection depends highly on the colors chosen to furnish the office and normally varies between 0.1 for pure dull black to 0.5 for a completely glossy white furnished office. In an average office the reflection factor is 0.3. The luminance signal is sent continuously to the HF-Regulator ballast or to the ActiLume Wireless I-10V SwitchBox. The ActiLume Wireless I-10V SwitchBox will pass through this signal to the HF-Regulator I-10V ballast.

The daylight sensor should be installed with a minimum distance of 1 meter from the window to prevent the sensor from looking outside. When the sensor is mounted too close to the window it will look partly outside. Sun reflection from a bonnet or a window of a car or snow can reflect directly into the sensor. The sensor will then measure such a high illumination levels that it will steer the artificial light to its minimal level or even switch off the artificial lights. The optimum distance [Y] from the window to the ActiLume sensor is shown in the drawing below.

This drawing shows the relationship between the distance from the window to the sensor [Y] and the height [H] (Y=tan31°xH) of the sensor.



2.1.3 Delay timer knob

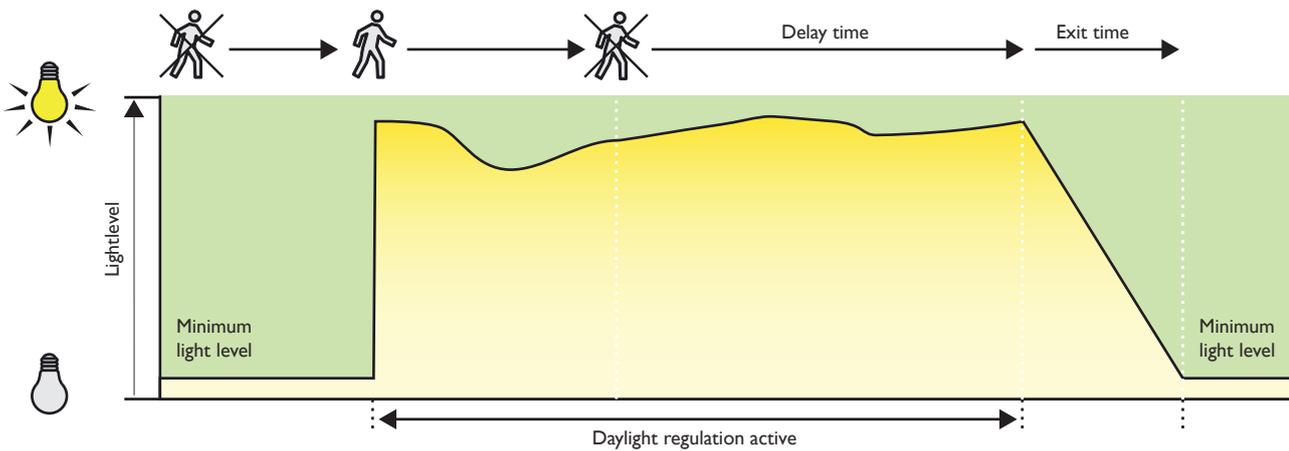


The ActiLume I-10V Sensor has the option to set the delay time between last moment of presence detection and starting the “Exit” sequence. During the Exit sequence of approximately 15 seconds, the lights will gradually dim down to the minimum level which is a dimming voltage of 2.5V. The sensor cannot dim below 2.5V due to the fact that there is a micro-processor inside the sensor that will stop functioning if the dim voltage drops below 2.5V.

The delay time can be varied between 1 and 30 minutes by means of rotating the dial with a small screwdriver. When rotated fully to the left the delay time will be approximately 1 minute and when rotated fully to the right it will be approximately 30 minutes. Default setting for the dial is 15 minutes.

If presence is detected during the Exit sequence, the lights will go back to the previous light level and the delay timer will be doubled in value. E.g. If the timer is set to 15 min and presence is detected during the Exit sequence the new delay time will be 30 minutes. This action will be taken only once. As soon as no presence is detected for 30 minutes, the sensor will start the exit sequence again and when presence is detected again after the Exit time the delay timer will be set back to the timing which is set by the dial.

This sequence of doubling the delay timer is called “Intelligent timer” or “Smart timer”.



2.1.4 I / II selector



On the ActiLume I-10V Sensor there is a second dial available that will give you the possibility to select setting “I” or “II”.

In Setting “I” the daylight regulation is disabled so there will be only presence detection. The light output of the luminaire will be set to maximum if presence is detected.

Setting “II” will give you daylight regulation as well as presence detection. This means that if presence is detected the daylight regulation will be activated.

The default the setting is “I”.

2.1.5 100 hours Burn in pushbutton



On the sensor, there is a pushbutton to activate/deactivate the 100 hours burn in sequence.

During the burn in time of 100 hours (when activated), there will be no possibility to dim the lights and there is no presence detection or daylight regulation. After 100 hours have passed, the feature will be switched off automatically and normal operation is activated again.

The 100 hours burn in mode can be activated by pressing the button once for 1 to 2 seconds. The system will respond by flashing the lights slowly. If the burn in mode needs to be interrupted, press the button again for 3 to 4 seconds. The lights will now flash again as a confirmation that the 100 hours burn in mode is stopped.

- 1 flash means 100 hours burn in is activated.
- 2 flashes mean 100 hours burn in is stopped.

2.2 ActiLume Wireless I-10V SwitchBox LLCI681/10

Although the ActiLume I-10V Sensor can be used stand alone in combination with a Philips HF-Regulator I-10V ballast, it can also be used in combination with an ActiLume Wireless I-10V SwitchBox LLCI681/10 and a Philips HF-Regulator I-10V resulting in even more energy savings. By introducing the ActiLume Wireless I-10V SwitchBox, the possibilities of the system are extended. With the SwitchBox it is possible to switch the lights automatically off when there is no presence detected or when there is excessive light. When having an ActiLume Wireless I-10V SwitchBox without sensor connected, the SwitchBox will function as a device that is capable of switching the connected ballasts and dim up/down whenever requested by the remote control or any other device within the wireless system. It will, of course, not react to daylight changes since it has no daylight sensor connected.

The Wireless SwitchBox is capable of switching up to 400VA. In this way the standby power losses of a luminaire, even with more than one ballast inside, will be very low. Since the ballast(s) are disconnected from the mains there will be only standby losses of the Wireless SwitchBox, which are very low (< 500mW at 230VAC). In this way the luminaire will comply with the latest norms and standards for standby losses.

When using the ActiLume Sensor and Wireless SwitchBox together, the Sensor is connected directly to the Wireless SwitchBox and the Wireless SwitchBox will provide power to the Sensor under all conditions. Since the I-10V DC Output of the Wireless SwitchBox is a mirror of what the Sensor supplies towards the Wireless SwitchBox, the system will still be able to perform the daylight regulation.

If there is an excessive amount of daylight, the Wireless SwitchBox can switch off the luminaire(s) at a light level of 150% or 250% of the requested light level (set by the diaphragm on the sensor). Whether the Wireless SwitchBox will switch off at 150% or 250% depends on the setting made by the dipswitch on the Wireless SwitchBox near the DC-Out connection on the Wireless SwitchBox.



Switch 1 is called Mode and it will give the possibility to change the daylight-override between 150% (Mode 1 – Switch 1 is set to off) or 250% (Mode 2 – Switch 1 is set to on). If the luminaire(s) are switched off due to excessive daylight, then, as soon as the light level goes below 100%, the Wireless SwitchBox will switch on the luminaire(s) again.

Switch 2 is called Prolong Time. With this switch a delay can be switched on (Switch in position “ON”, Prolong Time = 15 minutes) or off (Switch in position “OFF”, Prolong Time = off). When switched off, the detection area of the sensor can be tested.

If there is no ballast connected to the I-10V DC output of the wireless SwitchBox then the Wireless SwitchBox will detect this and will automatically set the daylight-override to 250%. As soon as the light level goes below 100%, the Wireless SwitchBox will switch on the luminaire(s) again.

This feature gives the opportunity to use it in combination with fixed output ballasts.

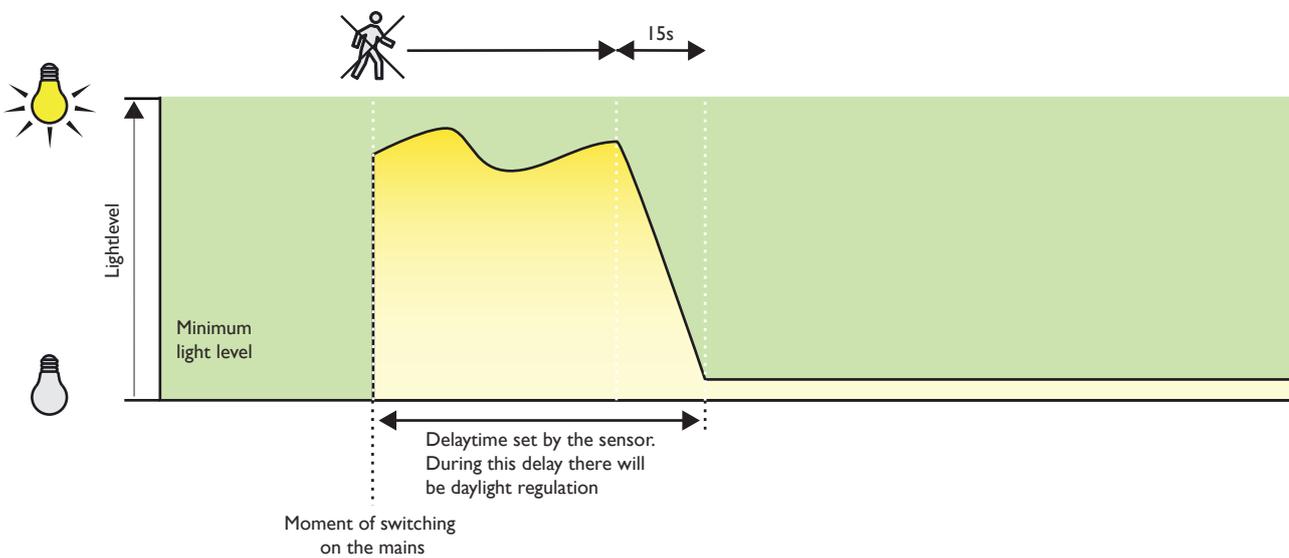
In this chapter the systems behavior is described as of the moment the mains is switched on.

3 System startup behavior at power up

In this chapter the systems behavior is described as of the moment the mains is switched on.

3.1 Startup behavior of the ActiLume I-10V Sensor

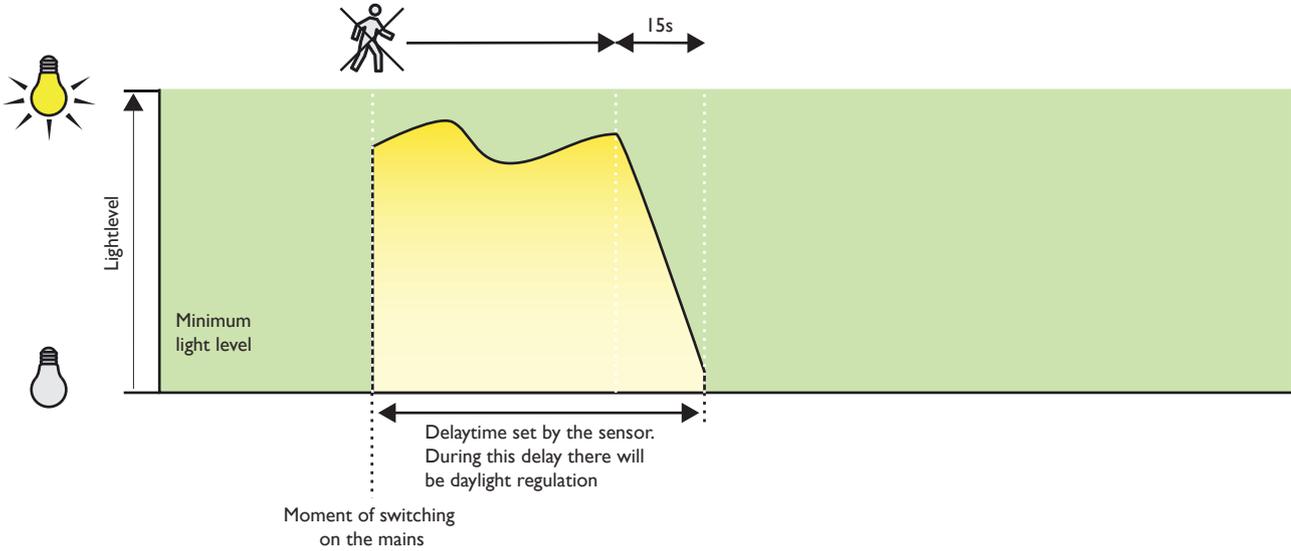
If an ActiLume I-10V sensor is used in combination with a I-10V device, at power up of the system the I-10V device will be controlled by means of the daylight regulation mechanism inside the ActiLume I-10V sensor. For the first 15 to 30 seconds after power up the PIR will not function because it needs this time to start up. So, occupancy is not detected during this time. If during the delay time of the sensor, there is nobody present, the sensor will start to dim down in about 15 seconds to the minimum level of 2.5V on the dim-input of the I-10V device.



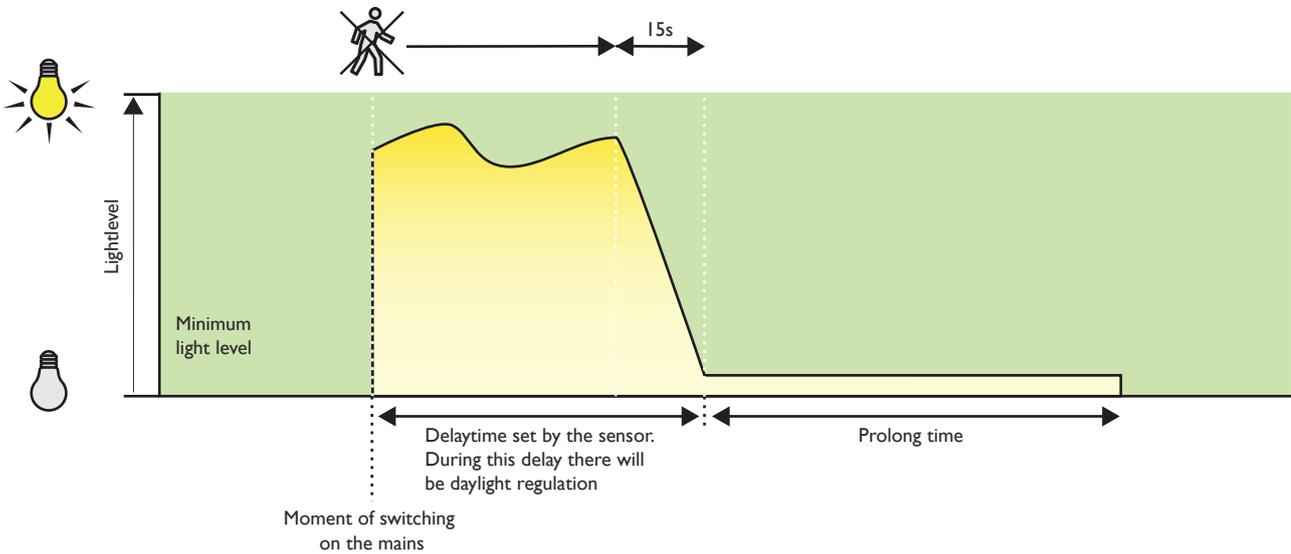
3.2 Startup behavior of the ActiLume I-10V Sensor & ActiLume Wireless I-10V SwitchBox

If an ActiLume I-10V sensor is used in combination with an ActiLume Wireless I-10V SwitchBox and a I-10V device, at power up of the system the device will be controlled by means of the daylight regulation mechanism inside the ActiLume I-10V sensor. For the first 15 to 30 seconds after power up the PIR will not function because it needs this time to start up and stabilize. Therefore, occupancy is not detected during this time.

If during the time set by the timer of the sensor, there is nobody present, the sensor will start to dim down in about 15 seconds to the minimum level of 2.5V on the dim-input of the SwitchBox, and after that the devices will be switched off by the SwitchBox.



With Prolong Time switched on:



4 ActiLume Wireless I-10V System User Modes overview

		ActiLume Wireless I-10V SwitchBox			
		Sw1 off	Sw1 on	Sw1 off	Sw1 on
		Sw2 off	Sw2 off	Sw2 on	Sw2 on
ActiLume I-10V Sensor Mode selector	I	PD + PLT=0	PD + PLT=0	PD + PLT=30min	PD + PLT=30min
	II	PD + DR +	PD + DR +	PD + DR +	PD + DR +
		DO@150% +	DO@250% +	DO@150% +	DO@250% +
		PLT=0	PLT=0	PLT=15min	PLT=15min

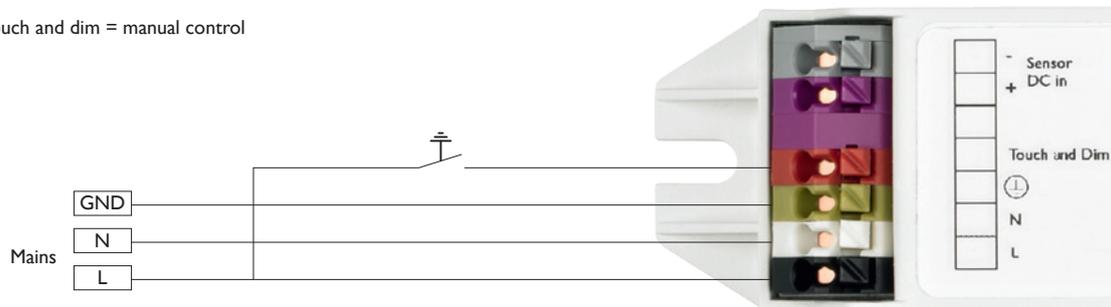
DR = Daylight Regulation
 PD = Presence Detection
 DO = Daylight Override
 PLT = Prolong Time

5 Manual control

When using the Wireless SwitchBox in combination with the sensor, there is the opportunity to have local personal control over the lighting. This is especially useful when the system is used in, for example, free floor standing luminaires. The personal control is realized by means of a Touch and Dim input on the Wireless SwitchBox or by remote control. When using the Touch and Dim function of the Wireless SwitchBox, this will temporarily change the light level for as long as there is presence detected. In this way it is possible to increase or decrease the light level for a period of time to the wishes of the end user. With the remote control it is possible to create and use up to 3 scenes/settings and to manually control the lights.

The Touch and Dim functionality works in exactly the same way as when using the Touch and Dim functionality of an HF-Regulator TD or HF-Regulator intelligent TD ballast.

Touch and dim = manual control



When the Touch and Dim switch is pressed briefly the Wireless SwitchBox will switch on the ballast if it was switched off or it will switch off the ballast if it was switched on. When pressing the Touch and Dim switch for longer, the ballast(s) connected, will be dimmed up or down depending on the previous direction it was dimmed.

Action	Duration	Reaction
Very short push	< 0.04 s	Will be ignored
Short push	0.04 - 0.5 s	Switch on/off opposite to previous situation
Long push	0.5 - 10 s	Dim up/down opposite to previous direction
Reset push	> 10 s	Set light to mid value (50% output and dimming direction is down)

Be aware that Touch and Dim will only have an effect on the SwitchBox connected to the specific “push to make” switch. This dimming and switching functionality is not transmitted to other devices within the system.

If Touch and Dim is being used and presence is not detected anymore, the ActiLume Wireless I-10V SwitchBox will switch off the lights. When entering the room again, the ActiLume Wireless I-10V Switchbox will switch on and activate the daylight regulation again.

6 Commissioning

Commissioning is in fact nothing more than getting your lighting system into a state of operation that the system was intended to be used. Commissioning of an ActiLume Wireless I-10V system is easy.

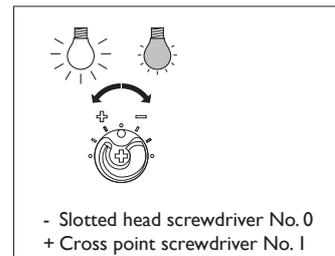
6.1 What equipment is needed

In order to commission an ActiLume I-10V sensor, the only thing that is needed is a small screwdriver. If the light level needs to be trimmed more precisely to a certain level, then a lux/light meter is also needed. If wireless devices need to be “connected/linked” together, then the UID8410 wireless remote control is also needed.

6.2 Light calibration

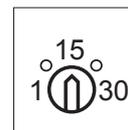
Depending on how precise the light level needs to be calibrated (trimmed to a certain lux level), a lux/light meter is needed or not. From the factory the diaphragm of the light sensor is put in a position such that under normal circumstances the light level will be approximately 500 lux on the table with a reflection factor of 0.3 at a mounting height of about 2.5 meter.

If a more precise light level is needed, the Lux/light meter needs to be placed on the workplane or other location specified. In order to change the light level, a small screwdriver is needed to rotate the diaphragm. By rotating the diaphragm clockwise the light level will decrease and by rotating the diaphragm counterclockwise the light level will increase. The adjustment is best done in small steps. After changing the setting of the diaphragm, the sensor needs a few seconds to stabilize the light output. If the light level is not yet meeting the requirement, the diaphragm can be turned further in the direction needed.



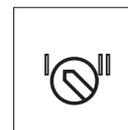
6.3 Delay time

The second item that can be set (if needed) is the delay time. The factory setting of the delay time is 15 minutes. If the delay time needs to be longer, the dial should be turned clockwise. If a shorter delay time is needed, it needs to be turned counterclockwise. The delay time can be set between 1 minute and 30 minutes.



6.4 Mode selection

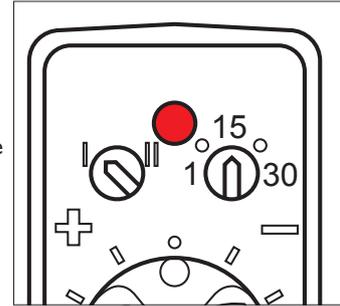
A third item that can be set (if needed) is the selector. It can be set to I or II. Setting I is daylight regulation disabled (thus only presence detection) and setting II is daylight regulation enabled (thus presence detection and daylight regulation). The default setting is I.



6.5 100h lamp burn-in

Finally, the “100 hours burn-in” feature can be enabled by pressing the button on the sensor for 1 to 2 seconds. The lights will blink once as a sign that the feature has been activated. During the activation of this burn-in feature there will be no dimming due to daylight regulation, nor presence detection initiated by the sensor. Though dimming is disabled during 100 hours via the sensor, with Touch and Dim directly connected to the Wireless SwitchBox, it is still possible to switch and dim the lights.

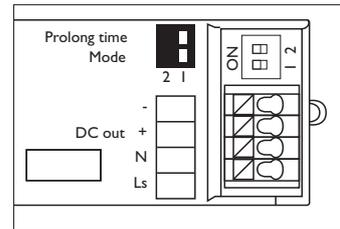
If for whatever reason the 100 hours burn-in feature needs to be interrupted, the button must be pressed for 3 to 5 seconds and the lamps will blink twice after release of the button, as an acknowledgment that the burn-in feature has been stopped.



6.6 ActiLume Wireless I-10V SwitchBox

If the sensor is used in combination with an ActiLume Wireless I-10V SwitchBox, the daylight override needs to be set to the correct value. If switch 1 is set to “OFF” (to the right in this picture) the daylight override is set to 150%. If switch 1 is set to “ON” the daylight override is set to 250%. The factory setting is 150% (switch 1 to “OFF”). Switch 2 activates the Prolong Time if needed. By default it is switched off (Prolong Time =0). If switch 2 is set into the “ON” position, the Prolong Time will be set to 15 min.

By default, both switches will be in the “OFF” position.

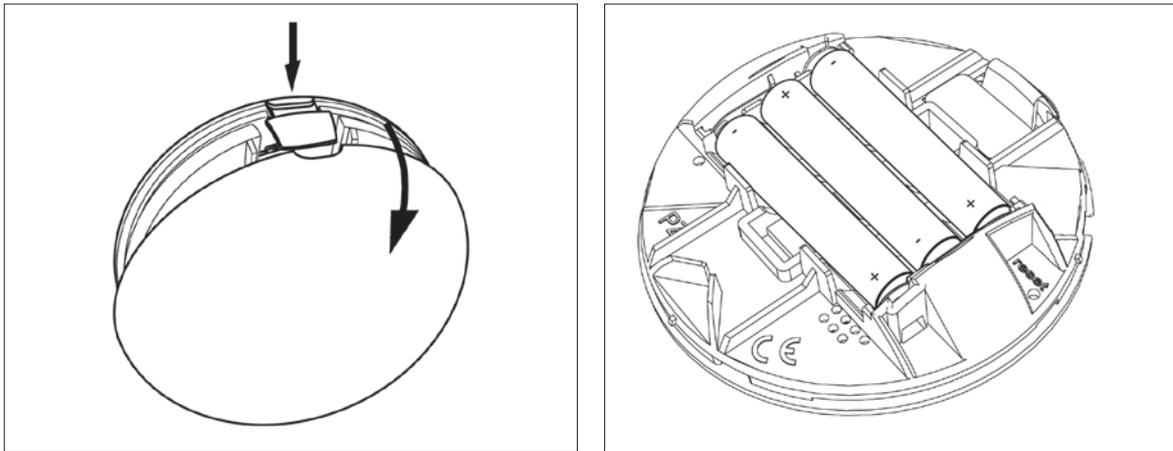


7 Creating a room and zones within a room

In all cases, first a “room” has to be created in order to connect all wireless devices together. After that, zones and/or scenes can be created.

7.1 Getting started

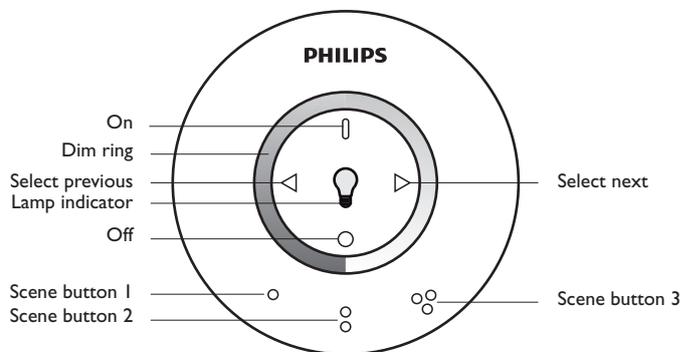
First the batteries have to be placed inside the remote control. To do this the battery compartment should be opened by pressing the release button on the side of the remote control and simultaneously removing the back of the remote control. After opening insert 3 AAA batteries and place the “+” and “-” of the batteries as indicated in the back of the remote control.



As soon as the last battery is inserted the remote control will play the Philips tune.

On the front side of the remote control there are several “touch buttons”. The following picture shows the front side of the remote control, in combination with the naming of these “touch buttons” as they will be used in the following chapter(s).

At this moment (as a non-commissioned system), the remote control has no wireless contact with any other device. Therefore if you touch any of the buttons on the front side of the remote control, it will not find any linked device and will make a buzzing noise.



7.2 Creating a room

Maximum 16 devices can be placed in one room. To startup this sequence the remote control needs to be set in commissioning mode. The following table can be used as guidance for this process.

Within the table the following abbreviations are used:

DRg	=	Dim Ring
flash	=	The button/area or device is flashing
light	=	The button/area is permanently on
PT	=	Philips Tune will be played
RC	=	Remote Control
RD	=	Riddle Down, meaning a sound will be played by the remote control of which the tone will go from high to low
RU	=	Riddle Up, meaning a sound will be played by the remote control of which the tone will go from low to high
SB	=	Scene Button
SN	=	Select next
SP	=	Select previous
touch	=	Touch this (these) button(s) on the remote control
#	=	No action to be taken

When lights on the remote control are flashing it means that an action must be taken by the user. When lights are burning continuously it means the remote is busy.

Step	Actions to be taken on the remote controll							Reactions from remote control					from wireless device
	SB1	SB2	SB3	Select previous	Select next	ON	OFF	SB1	SB2	SB3	Lamp	Sound	
A	Touch & hold					Touch & hold		flash	flash	flash		RU	
B	Touch							light			light		
C								light			flash	RU	flash
D1 or D2						Touch		light			light	RU	
					Touch			light			light	RU	
E		touch						flash	flash	flash		RU	

C and D1 or D2 have to be repeated until all 5 devices are checked and placed into the room.

If more devices need to be connected, repeat B through E for 5 more devices each time. Hence maximum 16 devices can be put into one room. As soon as all wireless devices that are within the reach have been placed into a room, the first wireless devices will start flashing again as a sign that all wireless devices within reach have been put into the room. To continue, if more wireless devices have to be put into the room, simply move the remote control into the direction where more wireless devices are placed that are not yet put into the room.

F						touch						RD	touch
---	--	--	--	--	--	-------	--	--	--	--	--	----	-------

Remarks

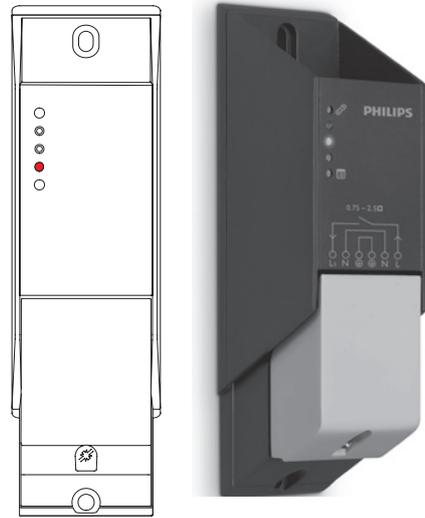
- A - RC enters the commissioning mode
- B - Start room creation and RC will search for device. Can take up to 10 seconds.
- C - Device is found
- D1 - Device is put into the room
- D2 - Device is skipped
- E - Stop room creation
- F - Exit commissioning mode

To check if all devices are connected, you should be able to switch the lights on and off by touching the “On” and “Off” on the remote control. If you now find that a device is not reacting, than this device is most probably not connected to the room. To add this device to the room, bring the remote control into the proximity of the missing device and execute A through F to find the device and add it to the room.

7.3 Adding an Actuator block to a room

Adding an Actuator Block to a room goes in the same way as adding an ActiLume Wireless SwitchBox.

1. Touch SBI +”ON” on the remote control simultaneously until you hear RU and SBI+SB2+SB3 will start flashing
2. Touch SBI. The Lamp on the RC will switch on and SBI will light up
3. As soon as the Switchbox is selected by the RC the RED light on the actuator block will start to flash in a 1sec sequence and also the connected lights will be switched on and off
4. By touching the “ON” button, the device will be placed into the room
5. Touch SB2 or SB3 and SBI+SB2+SB3 will start flashing
6. Touch the “OFF” button on the RC to exit the commissioning mode



7.4 Adding wireless sensors to a room

In order to enlarge the presence detection area, it is possible to add wireless sensors to the room. Remember that they will be one of the devices of the room and therefore a wireless sensor can be added to a room in order to extend the detection area.

To add the sensor to the room, bring the remote control and wireless sensor in close proximity of each other and execute the following sequence:

1. Touch SBI +”ON” simultaneously until you hear RU and SBI+SB2+SB3 will start flashing
2. Briefly press the LINK button on the front or the top of the sensor.
3. Touch SBI. The Lamp on the RC will switch on and SBI will light up
4. On the sensor the light will turn green and after a short period it will turn off
5. On the RC the lamp will start flashing as a sign that the sensor has been added to the room
6. Touch SB2 or SB3 and SBI+SB2+SB3 will start flashing
7. Touch the “OFF” button on the RC to exit the commissioning mode



IMPORTANT:

1. If multiple sensors need to be connected to the room to extend the occupancy detection area, then, repeat steps 2 to 5, before going to step 6
2. In order to be able to place an extension sensor in a room, at least one SwitchBox and/or Actuator block must be available in the room

7.5 Creating a zone

In order to be able to create zones (maximum 16), you must first create a room. To create a room see chapter 7.2 Creating a room.

Zones are created as follows:

- ▶ Touch SB1 + “ON” simultaneously until you hear RU and SB1, SB2 and SB3 start to flash and you will enter the commission mode
- ▶ Touch SB2 briefly so the lamp sign on the remote will go on and SB2 will light up
- ▶ The lamp sign on the RC will start flashing as soon as the RC has found one of the devices. This device will also start flashing
- ▶ To add the first device into this zone, touch “On”. The device will stop flashing
- ▶ Touch SN until the next correct device is selected for the same zone
- ▶ Touch “On” to place the flashing device into the same zone.
- ▶ Repeat the previous 2 steps until all devices that need to be in the first zone are placed into the first zone
- ▶ To start the next zone, touch SB2 again and follow the same sequence as before. Every time SB2 is touched again, a new zone will be created.



HENCE:

Each device can only be in maximum 1 zone at a time, but one zone can contain multiple devices. A maximum of 16 zones can be created.

An extension sensor can also be added into a zone. To do this, follow the same sequence as above and press SN until there is a red light flashing on the sensor. At that time touch “ON” on the remote control and the sensor will be added to the zone that is being used at that moment. On the sensor the red flashing light will change into a few green flashes as an acknowledgement of the linking into the zone.

To stop the creation of zones, touch SB1 or SB3. This will result in the flashing of SB1, SB2 and SB3. Touch “OFF” to exit commissioning mode and you will hear RD as a confirmation that you exited the commissioning mode.

To control one of the zones created, touch SN for 10 seconds - the lamp in the middle of the RC will light up and all devices connected will blink a few times. Touch SN to select the first zone. You can now operate all devices within this first zone. By using the “ON”, “OFF” buttons and Dim Ring the light level can be set to any level.

By touching SN again, you will go to the next zone and a check can be done if this next zone is working correctly. Repeat SN to check all other zones created if needed.



NOTE 1:

When SN is touched after the last zone was selected, the room will be selected again.



NOTE 2:

To leave the zone control you can also wait for 60 seconds without touching any of the buttons on the remote control.

7.6 Removing a device from a zone

When being able to add devices to a zone, you also must be able to remove or change a zone. To remove a device from a zone, the next sequence should be executed:

- ▶ Touch SB1 + “ON” simultaneously until you will hear RU and SB1, SB2 and SB3 start to flash and you will enter the commission mode
- ▶ Touch SB2 briefly so the lamp sign on the remote will go on and SB2 will light up
- ▶ The lamp sign on the RC will start flashing as soon as the RC has found one of the devices. This device will also start flashing
- ▶ If this is the device that should be removed from its current zone, touch “OFF”. The device will stop flashing
- ▶ Touch SN until the next correct device is selected to be removed from its current zone
- ▶ Again, touch “OFF” to remove this next device from its zone
- ▶ Repeat the previous 2 steps until all devices that need to be removed from its zone are removed

To stop the removal of devices from zones, touch SB1 or SB3. This will result in the flashing of SB1, SB2 and SB3. Touch "OFF" to exit commissioning mode and you will hear RD as a confirmation that you exited the commissioning mode.

7.7 Moving a device from one zone to another zone

For example, the following situation has been created with room- and zone-creation.

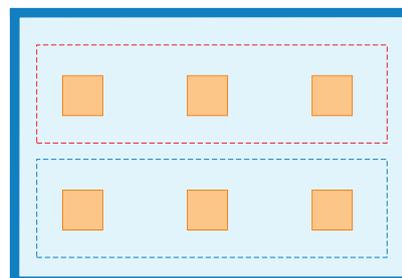
The room consists of zone 1, and zone 2.

Zone 1 contains luminaire 1, 2 and 3.

Zone 2 contains luminaire 4, 5 and 6.

Example 1: luminaire 1 has to be moved from zone 1 to zone 2. In order to do this the following sequence has to be used:

- ▶ Touch SB1 + "ON" simultaneously until you will hear RU and SB1, SB2 and SB3 start to flash and you will enter the commission mode.
- ▶ Touch SB2 briefly so the lamp sign on the remote will go on and SB2 will light up
- ▶ Touch SN until luminaire 4, 5 or 6 starts to blink
- ▶ Touch SB2 to "marry" the remote to zone 2.
- ▶ Touch SN until luminaire 1 starts to blink.
- ▶ Touch "ON" to move luminaire 1 into zone 2.
- ▶ Touch SB1 or SB3 to leave the zone menu.
- ▶ Touch "OFF" to leave the commissioning menu



--- Zone 1
--- Zone 2

Example 2: Create a zone 3 containing luminaire 1 and 4.

In this case there is no zone 3 to which the other luminaires can be moved. This means, first of all, luminaire 1 or 4 has to be extracted from zone 1 or zone 2 respectively.

This can be done in the way described in Chapter 7.6 - Removing a device from a zone. As soon as one of the luminaires has been removed from its zone, a new zone can be created as described in Chapter 7.5 Creating a zone. At this point, a new zone has been created to which the other luminaire can be moved to as described in Example 1 of this chapter.

8 Creating scenes

In total 3 scenes can be created on room level and/or on zone level.

If you want to create scenes on device level, then you will have to put each device into one zone and program the scenes on zone level. The maximum number of zones is equal to the maximum number of devices which is 16. A mix of scenes on room level and zone level is of course also possible.

8.1 Creating scenes on room level

Creating scenes on room level is easy - just set the light level of all devices using the Dim Ring. If you touch the Dim Ring, the lights will jump to the light level corresponding to the spot on the Dim Ring.

If you have found a light level, that you want to store as for example scene 1, then touch the SB1 for 3 seconds until you hear rapidly 3 beeps after one another. Repeat this for SB2 and SB3 in order to create 3 different scenes. The system is now immediately ready for use.

If it is needed to reset the scenes, then touch SB1, SB2 or SB3 very long until the 3 beeps have been played twice.

8.2 Creating scenes on zone level

To create a scene on zone level you will have to select each zone and set the light level for each zone before storing the scene.

To select the first zone, touch SN for 10 seconds and the lamp in the middle of the RC will light up and all devices connected will blink a few times. Touch SN to select the first zone. You can now operate all devices within this first zone. By using the "ON"- "OFF"- button and Dim Ring, the light level of this zone can be set to any level (within the capabilities of the device within that zone) or even be switched off.

If the correct light level is created, the next zone can be selected by touching SN. The second zone can now be set at the correct light level and as soon as that is done, the next zone can be selected and set to the correct light level in the same way.

As soon as all zones have been set to the correct lightlevel, the scene can be stored by touching for example SB1 until you hear rapidly 3 beeps after one another.

Repeat these sequences for SB2 and SB3 in order to create 3 different scenes. The system needs time to stabilize. In order to do this, leave the RC unused for about 1 minute until all lights on the RC extinguish. After that, the remote control is available for normal use.

8.3 Factory defaults Scenes

Factory defaults for Scene 1, Scene 2 and Scene 3 are respectively 100%, 50% and 25%.

If it is needed, to set back the factory default for e.g. Scene 1, than touch and hold SB1 for approximately 10 seconds until RU has been played two times. SB1, SB2 and SB3 will now light up for about 3 seconds, and the reset is done.

9 Replacing/adding a device/remote control afterwards

9.1 Adding/replacing a remote control to a room

To remove a remote control from a room follow the instructions in chapter 10.5 Resetting the remote control. Upon completion the remote control cannot control the room anymore.

The remote control can now be used at another place to create a room. In this way, one remote control can be used to commission multiple rooms.

If the remote needs to be connected (back) to an already commissioned room, it can be done by following the next sequence called “Reverse Joining”:

- ▶ Touch SB1 and I button on the remote control to enter the network menu. SB1, SB2 and SB3 start to blink.
- ▶ Touch SB1 to enter commissioning mode.
- ▶ One of the devices/lights will start blinking.
- ▶ If no device starts blinking and the “Lamp” on the remote is blinking, than touch SN until one of the devices within the room starts blinking.
- ▶ If this device is within the room to which the remote control should be added, touch and hold for about 10 seconds the “ON” button until RD is played.

All lights on the remote will go off. It is now placed within the room and can control the lights as before. In this way also a second remote control can be added to the room.

10 Resetting the system or a device



WARNING!!!:

When resetting the system or a device, all settings of the system/device will be cleared! All scenes will be lost and the devices that are reset, will not be part of a room or zone anymore!

If, for whatever reason, the system needs to be reset or a device needs to be removed from the room, this can be done in the following way. It is important that this is done in the sequence as given below. First the switchboxes, then the extension sensors, actuator blocks and finally the remote control.

10.1 Resetting a Wireless Switchbox

In order to reset a Wireless Switchbox you must enter the commissioning mode. This can be done by touching SBI + “ON” at the same time. As soon as you hear RU and the SBI, SB2 and SB3 buttons start flashing you can touch SBI. The lamp in the middle of the RC and SBI will light up. One of the luminaires with a switchbox will now start blinking.

- If this is the Wireless SwitchBox to be reset than touch “Off” and hold until the lamp connected to the Wireless SwitchBox goes to continue full light output. This Wireless SwitchBox is now reset.
- If this is not the Wireless SwitchBox to be reset than touch SN to select the next Wireless SwitchBox.

Execute these steps until all SwitchBoxes that need to be reset are.

10.2 Resetting a wireless ceiling sensor LRM1763

Press the button at the front of the sensor and keep it pressed until the red light stops flashing (8 flashes in approximately 8 seconds). Then release the button and the following sequence will appear on the sensor: Red, Yellow, Green and the light will go off.

10.3 Resetting a wireless wall, corridor and corner sensor LRM1765, 1770 or 1775

Press the button at the top of the sensor and keep it pressed until the red light stops flashing (8 flashes in approximately 8 seconds). Then release the button and the following sequence will appear on the sensor: Red, Yellow, Green and the light will go off.

10.4 Resetting an actuator block

Resetting an actuator block goes in the same way as resetting a Wireless Switchbox. First the commissioning mode must be started. This is done by touching SBI + “ON” at the same time. As soon as you hear RU and the SBI, SB2 and SB3 buttons start flashing, you can touch SBI. The lamp in the middle of the RC and SBI will light up. The red LED indication on the actuator block will now start blinking.

- If this is the actuator block to be reset than touch “Off” and hold until lamp connected to the actuator block switches on and off. This actuator block is now reset.
- If this is not the actuator block to be reset than touch SN to select the next actuator block.

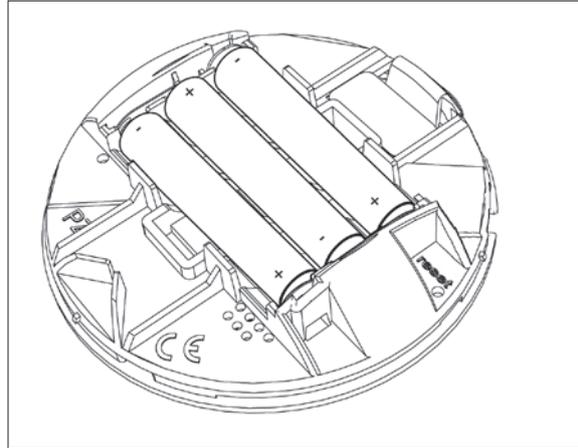
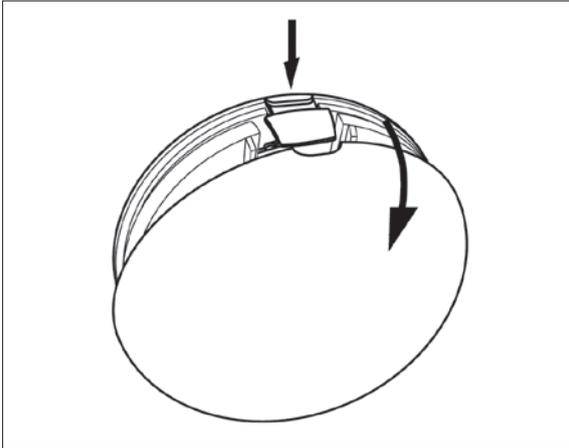
Execute these steps until all actuator blocks that need to be reset are.

If the actuator block is easy accessible, also another option to reset it can be used, by pressing and holding the “Link” button on the actuator block. A red led will start flashing 8 times. Succeeding these flashes, the lights will be switched off and on as an acknowledgment that the actuator block has been reset.

10.5 Resetting the remote control

The remote control is always the last device to be reset, since it is needed to reset all other devices. If the remote control has been accidentally reset before all other devices are reset, then first follow the reverse-joining instructions as given in Chapter 9.1 - Adding/replacing a remote control to a room and continue resetting devices.

To reset the remote control, open the battery compartment of the remote control. Take a paperclip and unfold it partly. Press the reset button (with the unfolded paperclip as displayed in the picture) for about 3 seconds until you hear a riddle down sound. At this point the remote control is reset. All stored data has been erased. The remote control will now start up again. When the startup sequence of the remote control is finished, you will hear the Philips Sound indicating system reset has been finalized.



11 Built in requirements

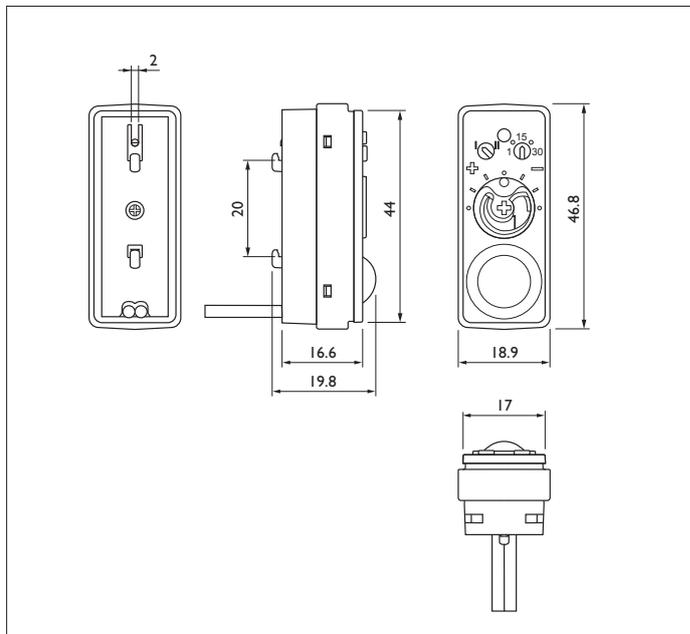
In this chapter you will find some illustrations of the outer dimensions of the components and how to mount these components. The ways of mounting given in this document are only examples - other ways of mounting are possible. The ActiLume I-10V sensor has flying leads of 100cm and is designed to be built into a Class I luminaire. The following chapters will explain how the sensor can be mounted into a luminaire.

Furthermore the sensor should be installed above a surface where the light level is representative of the area to be monitored. The maximum installation height is 3.5 meter from sensor to floor.

If the diaphragm is set to its default position (in the center), the output of the light sensor will be approximately 5V at 500 lux on the floor if the reflection factor is 0.3 (which is the average reflection factor of an average surface). For other surfaces, the exact dimming curve is related to its reflection factor.

11.1 Dimensions ActiLume I-10V Sensor

Below you will find some illustrations on the most important dimensions of the Sensor.



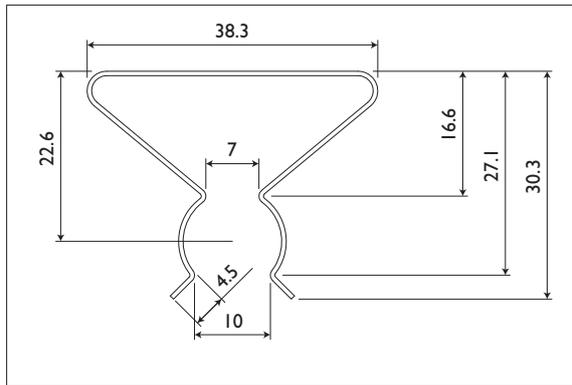
Dimensions LRI 655/00 in mm

11.2 Mounting of the ActiLume I-10V Sensor

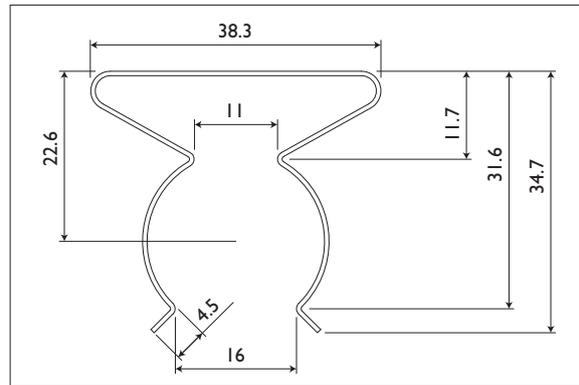


The sensor can be mounted into a luminaire in different ways. The following options are the most commonly used ways of mounting the sensor.

The most simple way of mounting the sensor into the luminaire, is by using a metal clip. The clip can be mounted on the backside of the sensor and then it can be clipped onto the lamp.



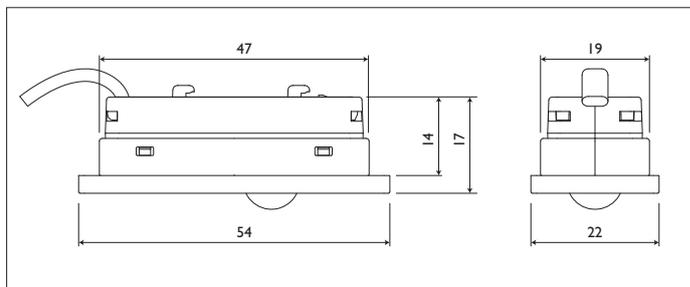
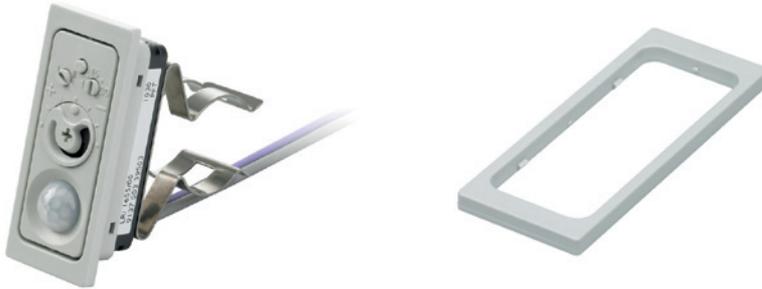
LCA8002/00



LCA8003/00

There are 2 different clips available, one for TL-D (T8) lamps and one for TL5 (T5) lamps. The TL5 version is called the LCA8002/00. The TLD version of the clip is called the LCA8003/00. Both types can be ordered separately and are packed in boxes of 50 pieces.

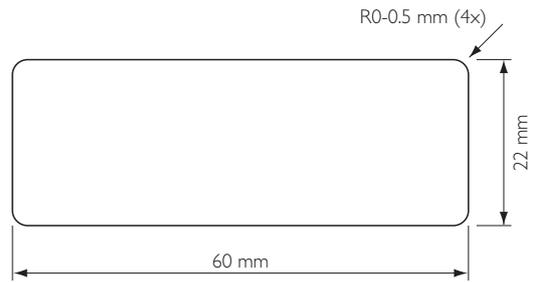
When a sensor is clipped on the lamp (or attached to optics) and the distance between sensor and lamp is less than 8cm, then the sensor should be located at the cold side of the lamp. The cold side of the lamp is the side where the wiring towards the ballast is the longest.



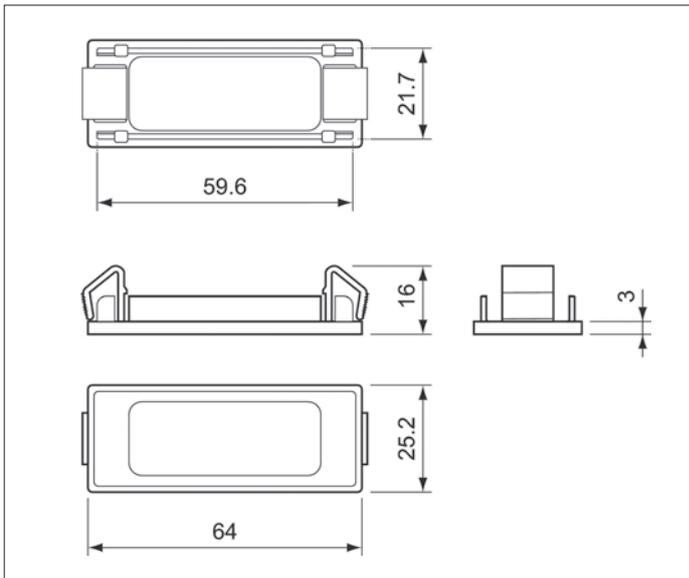
LCA8001/00

In order to increase the front size of the sensor so it will fit better between the lamella, a ring is available that can be clicked onto the front side of the sensor. The ring model number is LCA8001/00 and can be ordered in boxes of 100 pieces.

A second ring/clip, called LCA8005, can also be used but is meant for mounting the sensor directly into the metal of the luminaire. A rectangular hole of 60 x 22 mm must be made in the luminaire so the clip (including the sensor) can be put into the hole.

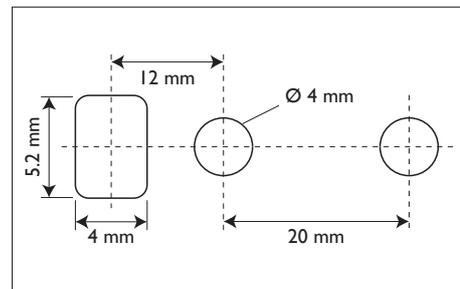


1. Required Luminaires opening dimension: 60 x 22 (mm)
2. Thickness fitness of Luminaires fixture: 0.5~2.5 (mm)

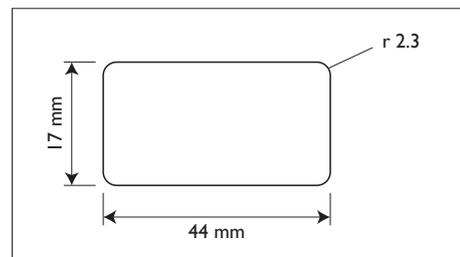


Another possibility is to use the latching rills on the back of the sensor. To use this way of mounting, 2 holes of 4 mm diameter have to be drilled 20 mm apart. A third hole is needed for the sensor wire go through the material. The thickness of the material can be up to maximum of 0.7 mm.

If the sensor is placed within the luminaire, a distance of at least 8 cm should be kept between sensor and sensor wiring and the “warm” side of the lamp. The warm side of the lamp is the side where the wiring from the ballast to the lamp(s) is the shortest.



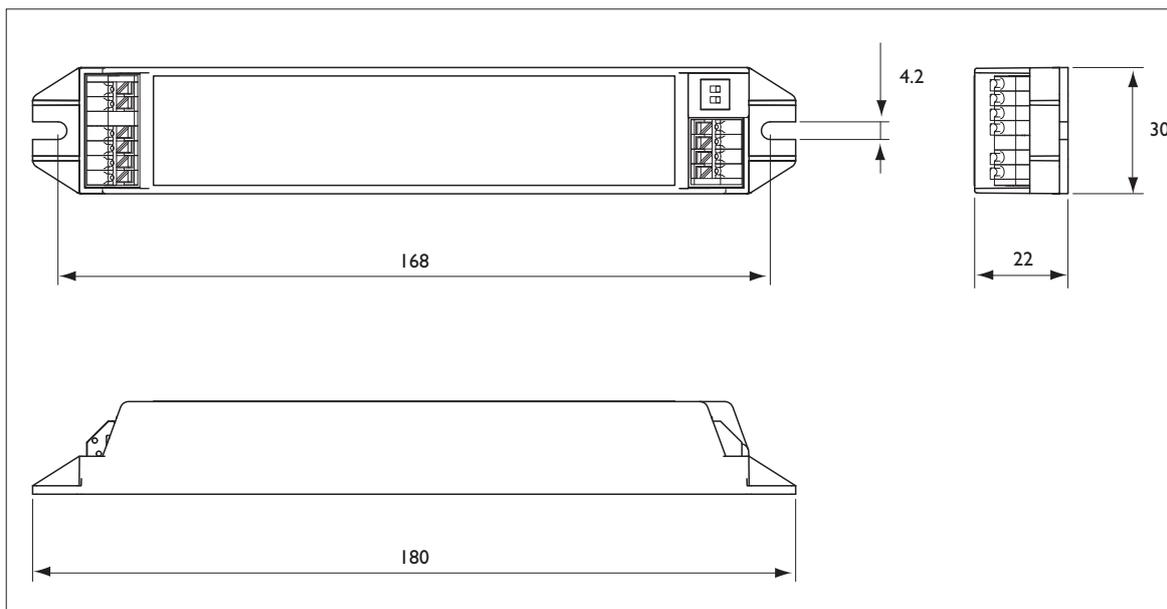
Another way of mounting the sensor is to punch a hole in the luminaire (e.g. in the infill panel) and push the sensor from the inside into the rectangular hole so only the front part of the sensor will be visible on the outside of the luminaire. Also here, a distance of at least 8 cm should be kept between sensor and sensor wiring and the “warm” side of the lamp. The warm side of the lamp is the side where the wiring from the ballast to the lamp(s) is the shortest.



Please contact your local sales representative for more info on ordering these rings or other accessories.

11.3 Dimensions ActiLume Wireless I-10V SwitchBox

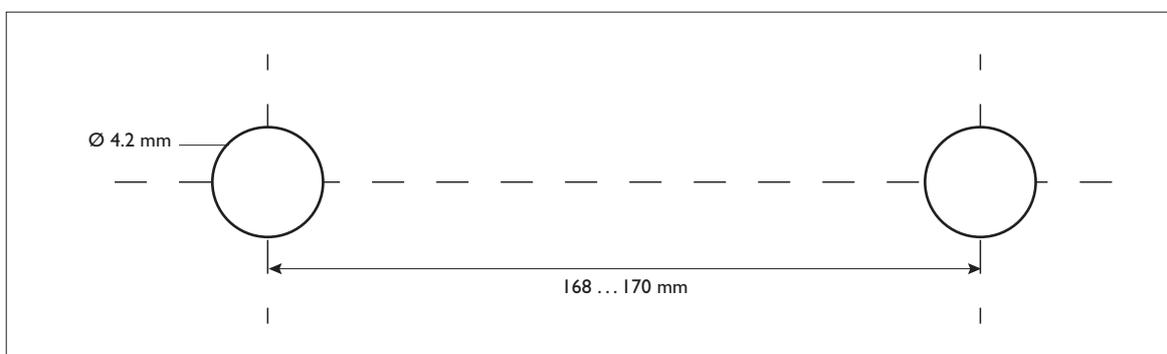
Below you will find some illustrations of the most important dimensions of the ActiLume Wireless I-10V SwitchBox.



As you can see, the cross-section of the Wireless SwitchBox is the same as the cross-section of an HF-Regulator ballast. This makes it very easy to mount the 2 components straight after one another.

11.4 Mounting of the ActiLume Wireless I-10V SwitchBox

It is easy to mount the ActiLume Wireless I-10V SwitchBox. Just 2 holes are needed in the following pattern.



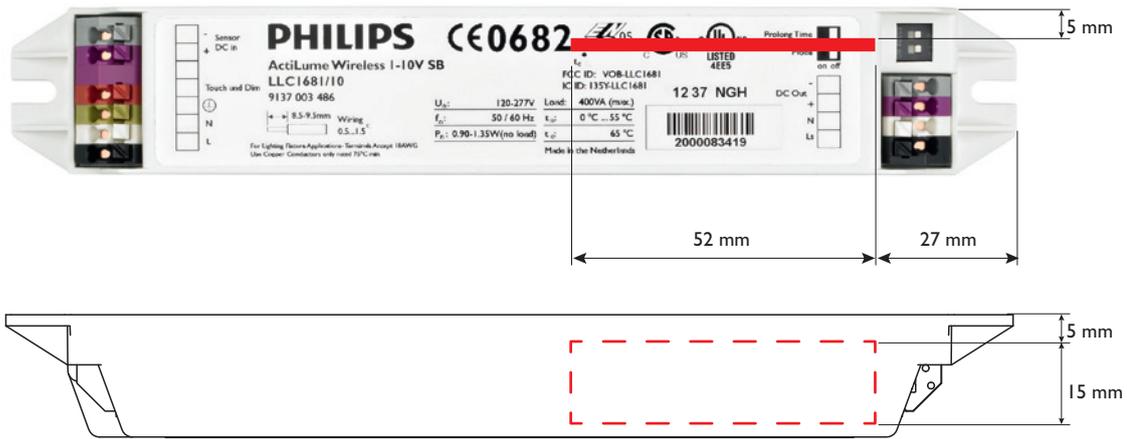
The Wireless SwitchBox can be mounted by means of 2 screws and nuts and using these holes.

11.5 Special precautions for the ActiLume Wireless I-10V SwitchBox

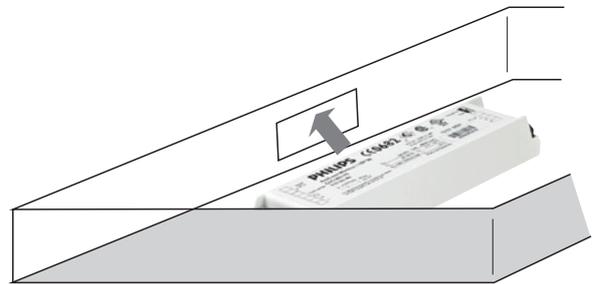
Since this is a “radio controlled” device using the ZigBee PRO protocol, some special precautions have to be taken into account, when placing the device into a metal luminaire. In order to have the RF signals enter and exit the metal luminaire, the luminaire must be “open” to 2.4GHz radio waves. If there are doubts whether a luminaire is suitable for using in combination with the ActiLume Wireless I-10V system, it is advised to make a test to determine if the combination can be used and/or if the transmission range is decreased or not.

The ActiLume Wireless I-10V SwitchBox consists of a “mother board” (MB) that handles the main functionality of the ActiLume Wireless SwitchBox and a “daughter board” (DB) that takes care of the RF signal transmission/reception. The location and situation of this DB is important, to have good communication between the different luminaires and other wireless devices.

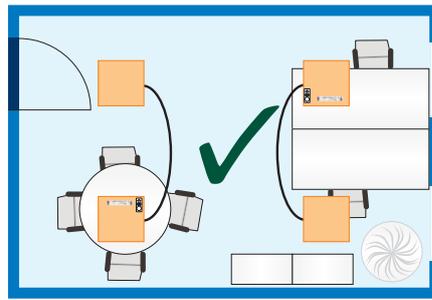
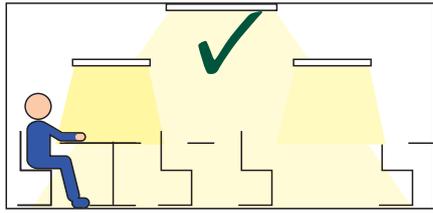
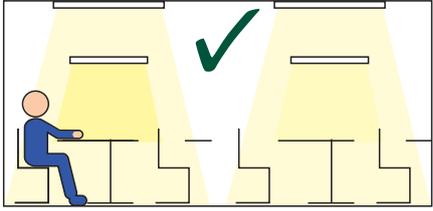
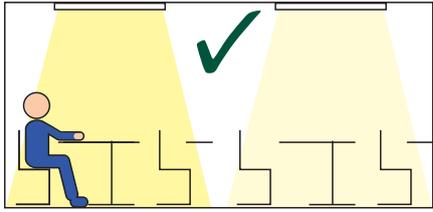
The following drawing marks where this DB is located inside the housing of the ActiLume Wireless SwitchBox and what its size is.



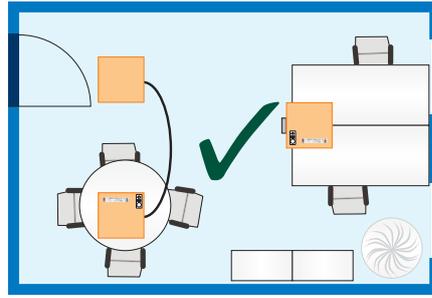
Since the DB is located near the side of the housing, it is of the utmost importance that this part of the housing is as close as possible to the open area of the luminaire. If the ActiLume Wireless I-10V SwitchBox is mounted as in the drawing to the right is given, it should be mounted tight against the wall. Each millimeter distance will decrease the transmission range of the ActiLume Wireless SwitchBox.



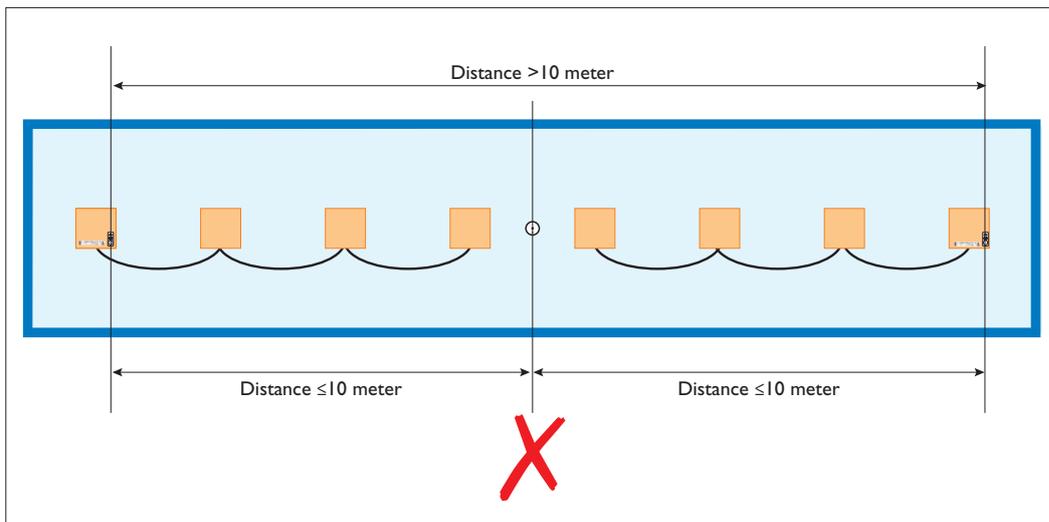
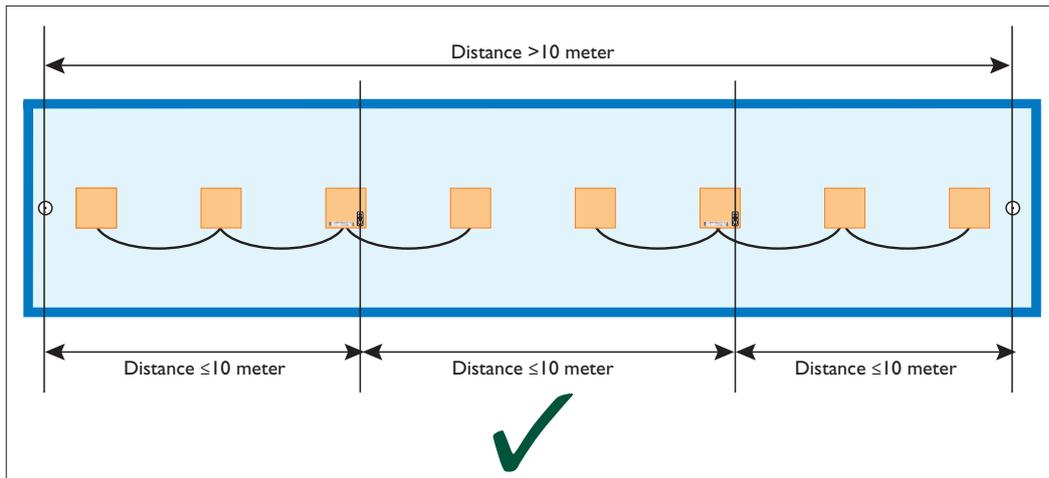
If the ActiLume Wireless SwitchBox is built into a luminaire, the best communication between the devices will exist if all ActiLume Switchboxes have the same direction. In this way the maximum transmission distance of 10 meter can be covered. A few examples of good setups are on the next page:



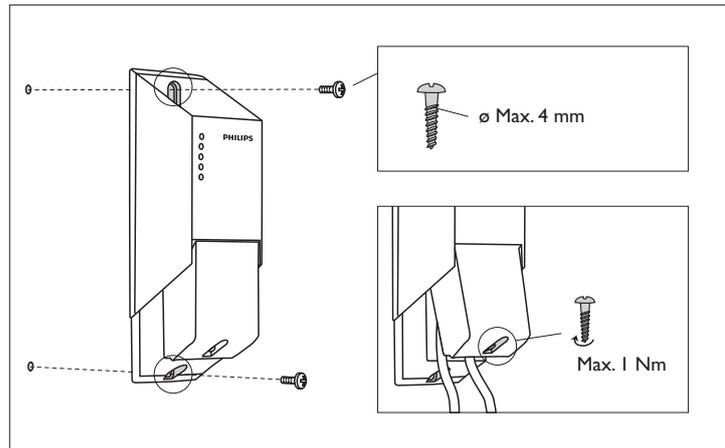
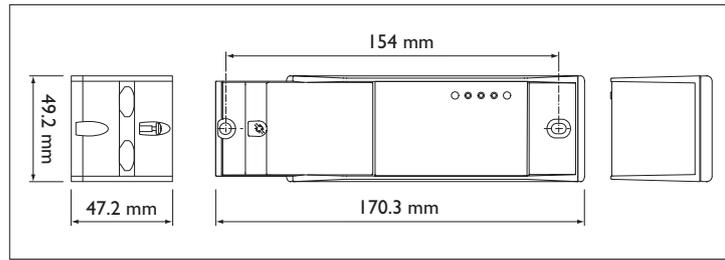
— Mains and I-10V



— Mains and I-10V



11.6 Mounting of the Actuator block



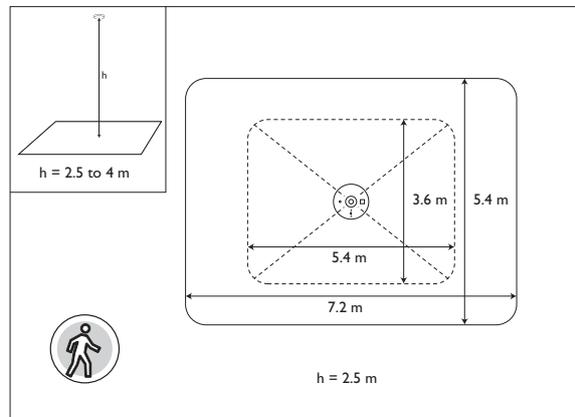
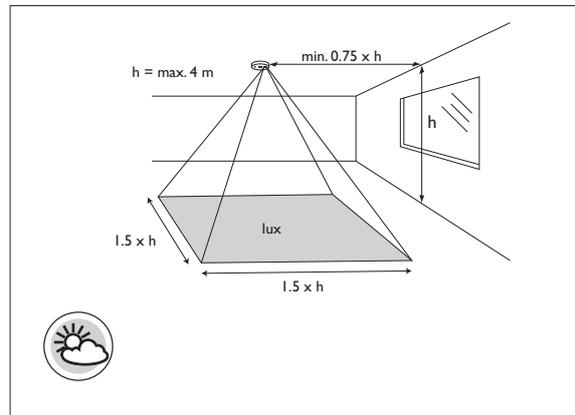
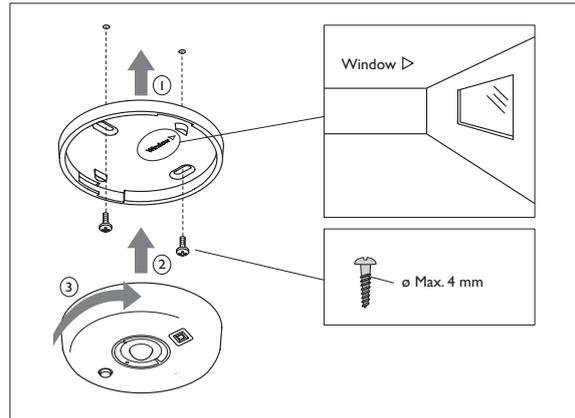
The actuator block can be mounted against the wall by means of 2 screws as displayed in the drawings above. The actuator block does not need to be mounted into a closed cabinet since the Actuator Block has strain relief for all cabling used.

11.7 Mounting of a ceiling extension sensor LRMI763

This sensor must be mounted on the mounting plate supplied with the sensor. Care must be taken to mount the sensor in the correct way. As displayed in the picture, there is a marking on the inside of the mounting plate that must point towards the window.

Furthermore the positioning in relation to the window is important for correct daylight sensing and having the least interference of light entering directly into the sensor.

The detection areas for light as well as presence (PIR) is given in the drawings to the right.



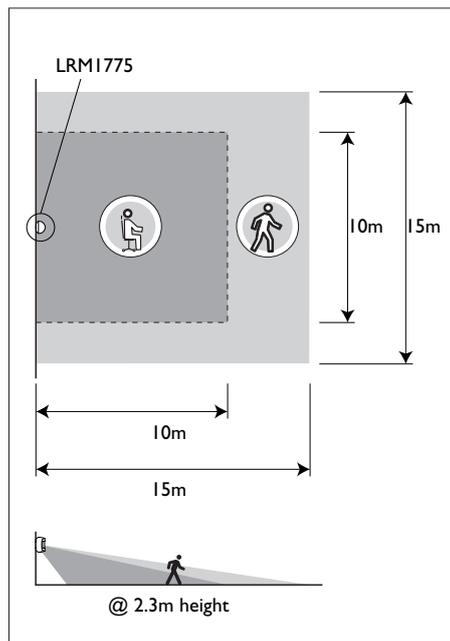
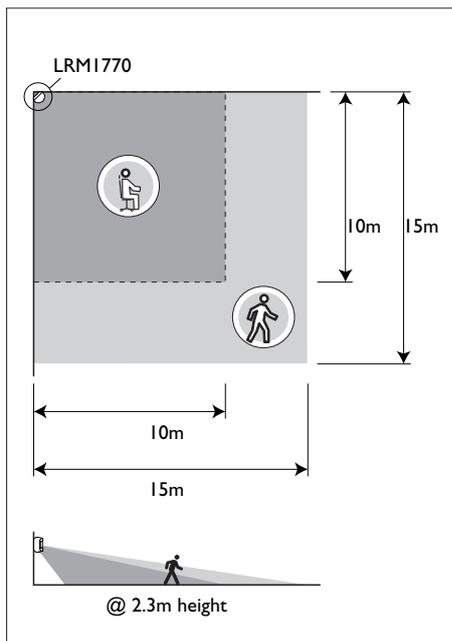
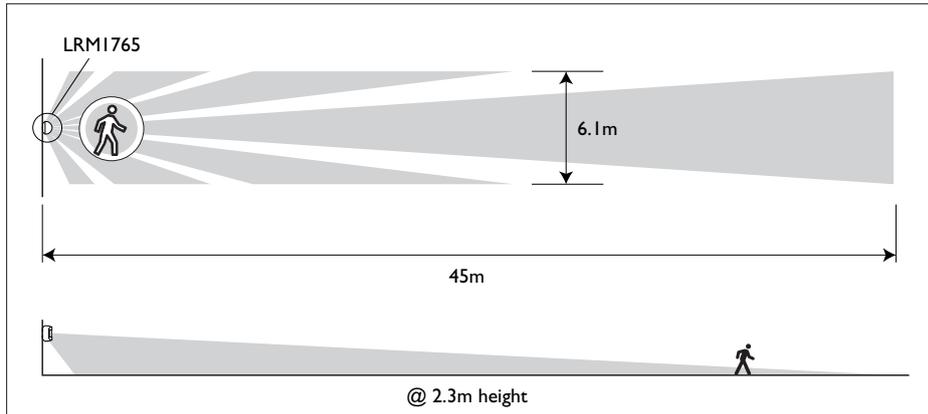
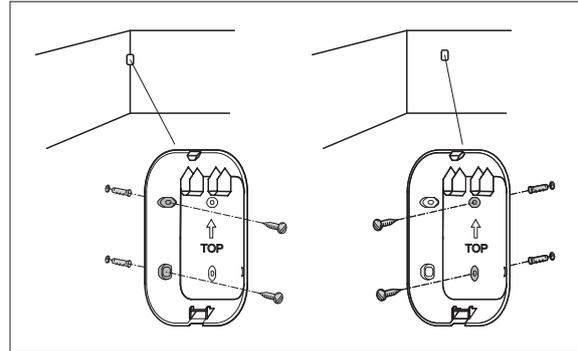
11.8 Mounting of a wall, corridor and corner sensor LRM1765, 1770 or 1775

A wall sensor can be mounted against the wall by means of 2 screws and plugs. These screws and plugs are not supplied together with the sensor

There are 3 wall sensors with different detection areas.

- ▶ LRM1765 Corridor sensor
- ▶ LRM1770 Corner sensor
- ▶ LRM1775 Wall sensor

The detection area shapes are given in the drawings below.



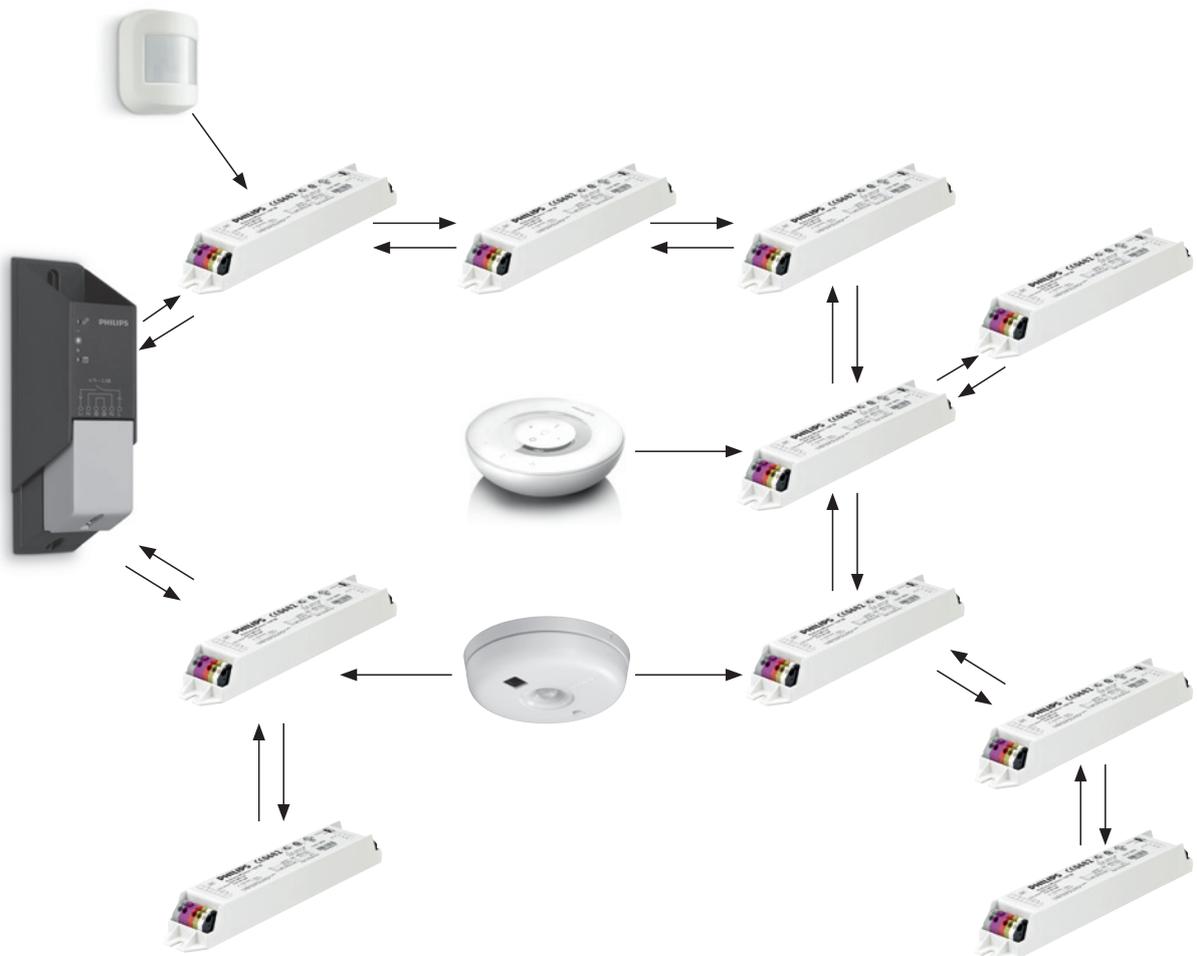
12 How does a wireless network function

A wireless network is made up as a so-called mesh network consisting of routers and end-devices. Routers are for example ActiLume Wireless switchboxes and actuator blocks. These devices can send, receive and forward messages. An end-device can only send (and receive only during commissioning) messages but are not capable of forwarding messages. End-devices are for example extension sensors and the remote control and are always running on a battery.

The remote control communicates only with one ActiLume Wireless I-10V SwitchBox or actuator block (whichever is the closest to the remote control), and this Wireless SwitchBox / actuator block will communicate with one or more other Wireless devices until the full network is covered. This is called hopping. If one Wireless SwitchBox fails, the system will search for a different route in order to keep as many Wireless SwitchBoxes as possible within the network.

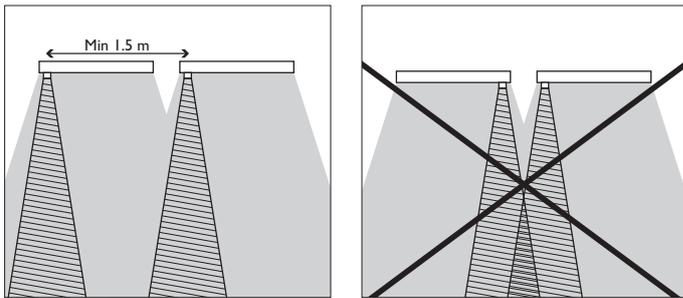
The permitted distance between the Wireless SwitchBoxes / actuator blocks is a maximum of 10 meters for guaranteed communication between the Wireless SwitchBoxes within the network. The distance between one Wireless SwitchBox to the next Wireless SwitchBox is a maximum 10 meters. Of course, these distances are decreased if (reinforced concrete) walls, metal cupboards, metal ceilings, etc. are in between the different Wireless SwitchBoxes.

The distance is relatively small since the transmission power is very low. The transmission power per Wireless SwitchBox is only 1mW. Compared to (for example) 32 mW for your laptop Wifi connection, or 500mW for a mobile phone.



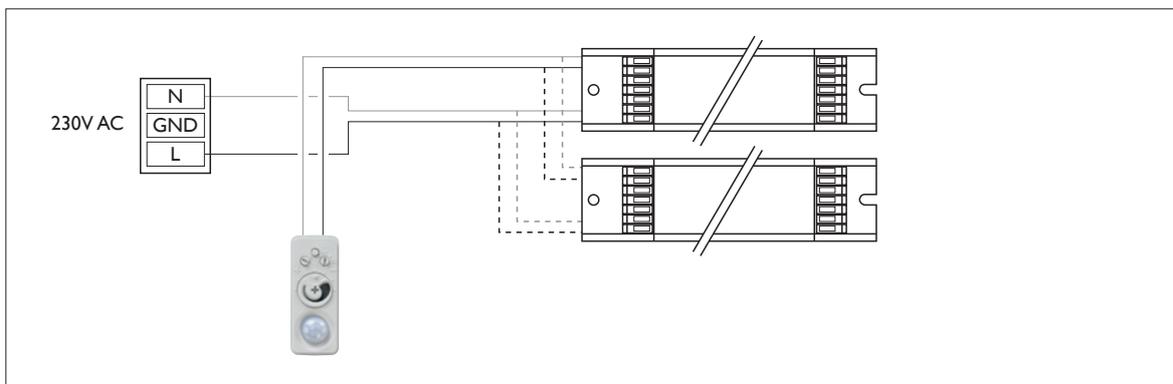
13 System requirements

In the following few chapters you will find instructions on how to use the ActiLume I-10V Sensor and Wireless SwitchBox in different setups. If multiple luminaires are used in the same area, the distance between the different sensors should be at least 1.5 meter. This to prevent that a sensor can “see” the light variation of the other luminaire and try to act on it.



13.1 Wiring the ActiLume I-10V Sensor with an HF-Regulator

The 2 flying leads of the sensor are used to connect directly to the HF Regulator I-10V - the violet wire for the positive input and the grey wire for the negative input.



ActiLume I-10V system setup (sensor only)

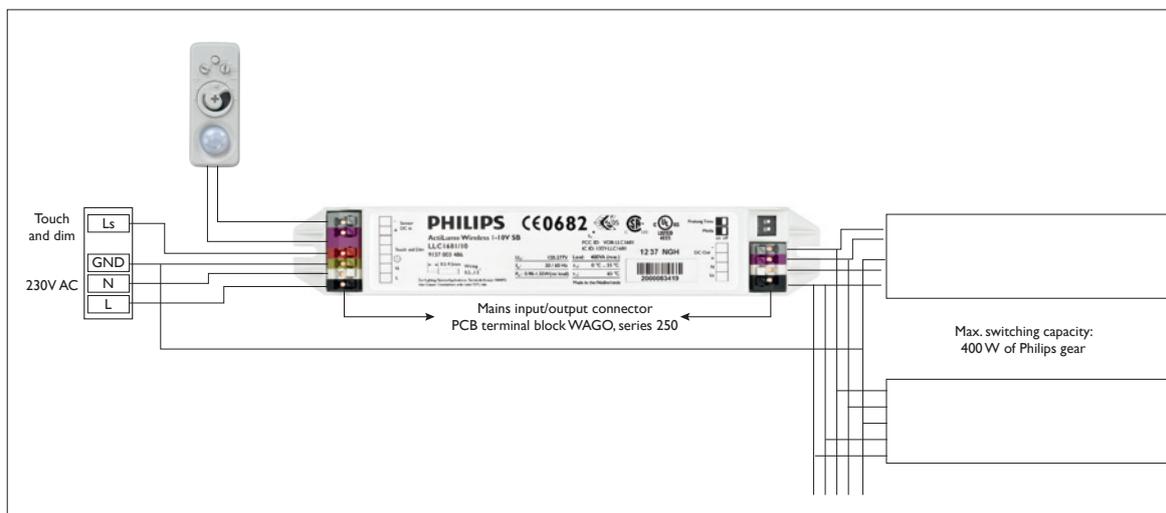
The ActiLume I-10V Sensor can handle the reverse connection to the ballast. If the connections are reversed on the dimming input of the ballast, the light output will go to the minimum level. There will be no presence detection or daylight regulation available. If the sensor is accidentally connected to the mains, it will fail immediately. Furthermore, it is possible to connect up to 20 Philips HF-Regulators to one ActiLume I-10V sensor.

If the I-10V line goes outside the luminaire, precautions have to be taken to make sure that the wiring used is mains rated cable, since there is only basic insulation towards the mains, and strain reliefs must be used on the I-10V wiring going into/coming out of the luminaire.

13.2 Wiring the ActiLume I-10V Sensor & Wireless SwitchBox with an HF-Regulator

The 2 flying leads of the sensor are used to connect with the ActiLume Wireless I-10V SwitchBox - violet for positive input and grey for negative input.

When connected to the ActiLume Wireless I-10V SwitchBox, it is recommended not to use additional long wires to connect the ActiLume I-10V Sensor to the Wireless SwitchBox. This is to avoid communication degradation. The maximum load that can be connected to the Wireless SwitchBox is 400W. The equivalent in Philips HF-Regulator gear can be found in chapter “15 Load connection table LLC1681/10”.



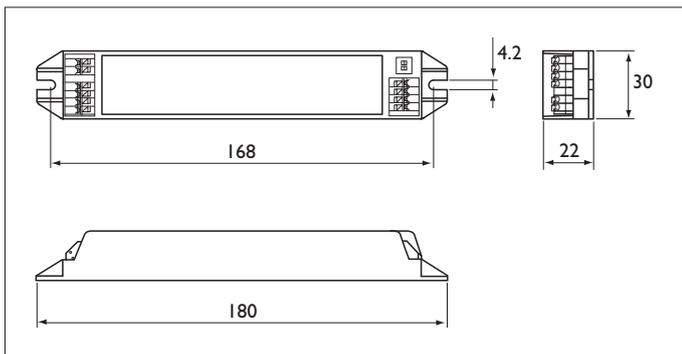
The ActiLume I-10V Sensor and Wireless SwitchBox can handle the reverse connection to the ballast/Sensor. If the connections are reversed on the dimming input of the Wireless SwitchBox (+ on – and – on +), the light output will go to the minimum level. No presence detection, nor daylight regulation will be available. If the Wireless SwitchBox I-10V input is accidentally connected to the mains that is not a problem as the I-10V input can handle mains. The I-10V output on the other hand, cannot handle mains voltage, and the Wireless Switchbox will fail immediately.

If the I-10V line goes outside the luminaire, precautions must be taken to ensure that the wiring used is mains rated cable, since there is only basic insulation towards the mains, and strain reliefs have to be used on the I-10V wiring going into/coming out of the luminaire.

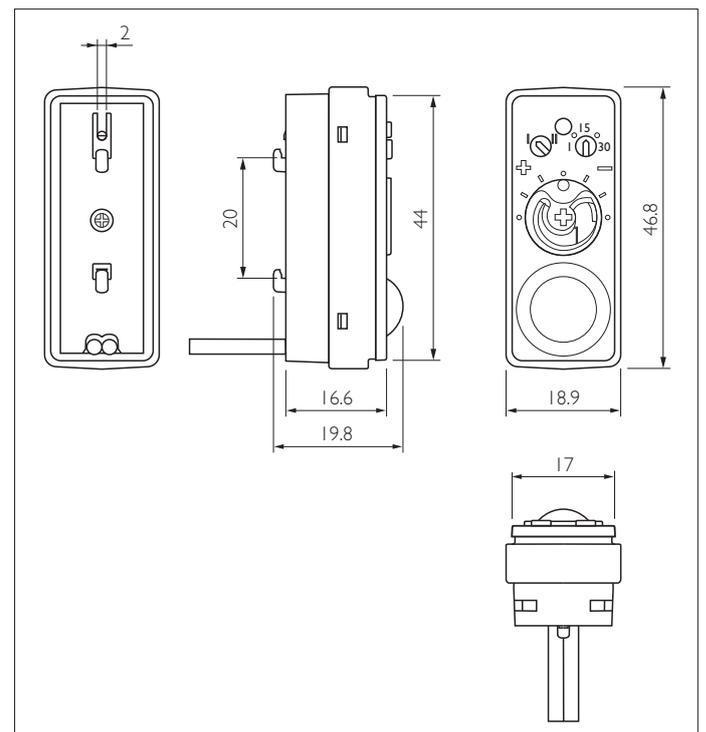


General description

The ActiLume Wireless I-10V system consists of the ActiLume I-10V sensor and the ActiLume Wireless I-10V Switch Box. The ActiLume I-10V luminaire-based sensor enables daylight regulation and dimming when no presence is detected. The ActiLume Wireless I-10V Switch Box receives information of presence/ no presence from the sensor and will switch the connected lighting on or off. Simultaneously with this switching on or off, the Switch Box will communicate this information wirelessly to other linked wireless Switch Boxes. The linked luminaires (with an ActiLume Wireless I-10V Switch Box) will act as one system when switching on and off. To act as one system, the ActiLume Wireless I-10V Switch Boxes must be linked into one network called a room. Within this room you can create various zones. When using zones, you can vary the task-lighting and background-lighting depending on occupancy in the area. The system is supported with a Wireless Remote control, which can be used to switch on or off and dim the luminaires in the room, and create scenes between the different zones. On the remote there are three buttons to store these scenes. Within the room you can also include the latest versions (/10) of the OccuSwitch Wireless devices (the OccuSwitch Multi Sensor and the OccuSwitch Actuator). This OccuSwitch Wireless range contains a Wall, Corner and Corridor sensor. With the remote it is possible to commission the room but a special combination of buttons must be pressed to enter the commissioning mode. In the future, we will support commissioning with the MultiOne configuration tool.



Dimensions LLC168110 ActiLume Wireless I-10V SB



Dimensions LRI1655100 in mm

Features

- With the ActiLume Wireless I-10V you can easily link cubicles/ free floor standing and suspended luminaires into one system without expensive cabling costs or loss of flexibility for future additions.
- The Wireless network is based on the ZigBee PRO standard (IEEE 802.15.4, WPAN) which is targeted at radio-frequency (RF) applications. The ZigBee operates at 2.4 GHz in most regions worldwide. The ZigBee protocol enables fully distributed peer-to-peer communication models, where all devices are equal (no master/slave relationship). The ZigBee network layer natively supports star, tree, and generic mesh networks. Altogether, ZigBee supports a robust network that supports low data rate communication, a long battery life (if devices operate on batteries), and a secure network.
- Over time, a network can be extended with other devices from the OccuSwitch Wireless (OSW) family. The OccuSwitch Wireless family consists of the OSW Multi Sensor and the OSW Actuator.
- Within a wireless network up to 16 wireless devices can be connected. The ActiLume I-10V sensor is part of the system, but is not a wireless device since the Switch Box is. However, the OccuSwitch Wireless Multi Sensor is a wireless device.
- The features of the ActiLume I-10V sensor are still in place; adjustment of light-sensing within a range from 1/3 to 3 times the value of the nominal setting; customized delay time between 1 and 30 minutes; activating 100 hours burn-in
- Individual override via personal control by means of the Touch and Dim functionality on the Switch Box is also still available.

Application areas

- Offices; office areas; open spaces
- Meeting rooms
- Free floor standing luminaires, pendular luminaires, single luminaire cubicles
- Corridors

When presence is detected by a sensor within a zone in an application area, the wireless network ensures that the luminaires within that zone switch to full brightness and all other linked zones switch to a background level of lighting. When movement is detected in another zone covered by another sensor (for example, by someone walking), the luminaires in that zone will switch to full brightness and the zone which you left will go to background level. When the person leaves the application area covered by the various sensors, the network will switch off. The ActiLume Wireless I-10V system enables luminaires to be functionally linked without the need to link them physically.

Specifications

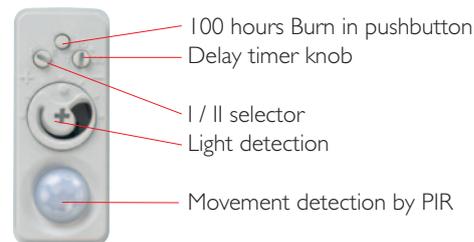
The ActiLume I-10V sensor is to be connected to the ActiLume Wireless I-10V Switch Box.

The sensor can also be connected directly to a I-10V driver. For this application, please refer to the ActiLume I-10V Datasheet.

ActiLume I-10V Sensor

Daylight sensing (DS):

When there is enough daylight, the luminaire will dim. The dimming function is similar to the ActiLume Micro LuxSense functionality. The light level can be adjusted by rotating the diaphragm (same as for the ActiLume Micro LuxSense). The minimum dim level corresponds to 2.5V on the dim input of the ballast. The Dim levels are not passed on to other ActiLume Wireless devices since the adjustment of the light is done locally.



Presence detection (PD)

When no presence is detected the luminaire will be dimmed down to a dim level corresponding to 2.5V on the dim input of the ballast used. The delay time of dimming can be set to a value between 1 and 30 minutes.

On the sensor there is an adjustment dial to choose between:

- Setting I = Presence detection only. (Default factory setting)
- Setting II = Presence detection and Daylight Sensing

The luminaires will switch off if none of the linked sensors detect any presence.

When one of the connected sensors in a certain zone starts to detect presence, that zone will go to full power and the other linked zones (where no presence has been detected) will go to background level (2.5V).

Top middle selector: Burn-in button

On the sensor there is a button to activate the burn-in mode. This burn-in mode switches on/off the functionality of daylight and presence detection-dimming for 100 hours to ensure a proper 100% light output burn-in period of a fluorescent lamp. After 100 hours of burning the system will automatically switch to the normal operating mode. The burn-in mode can be activated or deactivated by pressing the button. The activation/ deactivation of the burn-in mode is confirmed by blinking of the lamps:

- When the burn in button is pressed for between 1 second and 3 seconds, the system is in burn-in mode. This is confirmed by one blink.
- When the button is pressed for between 3 seconds and 5 seconds, burn-in mode is deactivated. This is confirmed by two blinks.

Smart Timer function

The sensor will automatically lengthen the delay time when the sensor detects presence directly after it has given the signal "no presence". The delay time will be doubled once - this to reduce the annoyance of false "no presence" triggers.

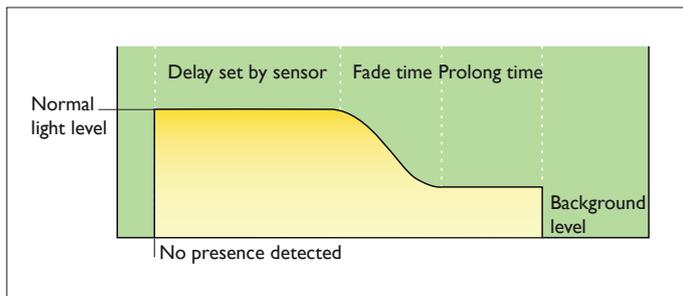
Application limitations

Detection of sensor designed for ceiling heights < 3.5m

ActiLume Wireless I-10V Switch Box

The Sensor will give a signal over the I-10V connection when the Switch Box can switch off the ballast.

When the ballast is switched off, the Sensor will be fed by the Switch Box to ensure that daylight and presence detection is still functioning.



Dipswitches

On the Switch Box there are two dipswitches. The switches have the following function:

The "Prolong Time Switch"

This switch is used to set a prolong time. When the switch is in "on" position, the Prolong Time = 15min. When in the "off" position, the Prolong Time = off (0 sec).

The "Mode Switch"

This sets the light level at which the light level will switch off. With normal dimmable drivers the light level at which the daylight-override can be switched off should exceed 150%. This can be adjusted to 250% so that switching off only happens when you have excessive daylight (or if the switching off of the light becomes inconvenient).

Mode Switch / off: at 150% of light (when used with HF-R ballasts - default factory setting)

Mode Switch / on: at 250% of light (at excessive daylight or when used in combination with HF-P ballasts).

No HF-Regulator but HF-Performer installed:

When the I-10V lines from the Switch Box are not connected to the ballast, the Switch Box will conclude an HF-Performer is connected and will only listen to the 250% signal. This is to ensure that no oscillation will take place.

Personal Control

On the ActiLume Wireless I-10V Switch Box there is "Touch and Dim" input according to the Philips standard. The Touch and Dim function is only for the Switch Box connected - the information will not be shared wirelessly over the network.

When "Touch and Dim" is used to override the automatic function, the setting will be forgotten when the Switch Box has switched off the lighting due to no presence.

The power consumption of the ActiLume Wireless I-10V Switch Box in standby mode is less than 0,5W. In standby mode the Switch Box feeds the ActiLume I-10V Sensor and keeps the Wireless function active to receive commands from other devices. The Switch Box is suitable for 120 to 277V mains 50/60Hz.

To optimize the switching function and life of the relay, the Switch Box detects the mains 0-crossing and switches on during the next pass. The Switch Box can switch multiple capacitive ballasts:

- up to 3 ballast HF-R 258 TL-D EII or

- up to 2 ballast HF-R 280 TL5 EII (capacitive load depending)

For other Philips HF-R types, please refer to the ActiLume Wireless I-10V system Application guide.

Wireless communication

The Wireless network is based on ZigBee PRO standard (IEEE 802.15.4, WPAN) which is targeted at radio-frequency (RF) applications. The ZigBee standard operates at 2.4 GHz in most regions worldwide.

ZigBee is an Industry standard which is supported by multiple HW/SW vendors. Nevertheless, the ActiLume Wireless I-10V system cannot interact with third party ZigBee devices. The ZigBee protocol enables fully distributed peer-to-peer communication models, where all devices are equal (no master/slave relationship). This means that the application is divided over the devices in the network. Every device knows how it functions within the network. The result is that if one device does not function (removed or switched off at the mains), the remaining devices keep functioning.

The network is based on a mesh network so the devices pass on the received commands. The distance between the devices should not exceed 10 meters. The advantage of this mesh network capability is that the network has a self-healing routing: automatic route discovery over the mesh network. ZigBee has tolerance for a large number of co-located networks due to use of multiple communication channels and CSMA-CA channel access. The commands do have network security according to AES 128-bits network encryption.

Handheld Scene Remote

Upon occupancy the system will switch on the lights and start daylight regulation on luminaires with a sensor. It is possible to override the automatic light level using the remote:

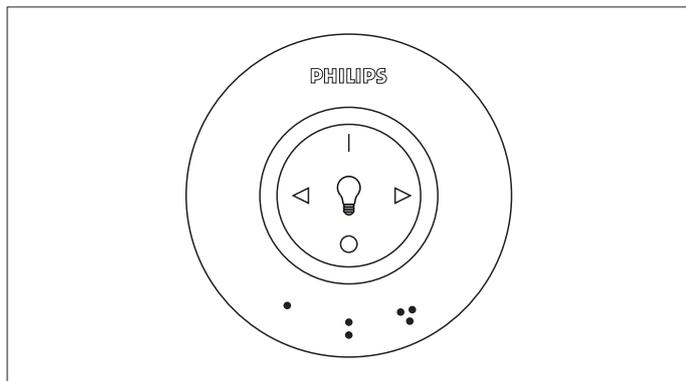
- The lights in the room can be switched on and off using the 1 and 0 buttons
- In a room with dimmable lights, the dim level can be set by touching the dim ring at the required level.

If you want to dim a certain zone, first activate the zone selection by pressing one of the horizontal arrows for 3 seconds (confirmed by a beep and blinking lamp). Now, you can select through the various zones. When you reach the zone you want to dim you can adjust the light level by touching the dim ring at the required level. To store a setting, press one of the three scene buttons at the bottom of the remote until you hear an audible confirmation.

Selecting a scene disables daylight regulation and fixes the light setting at the scene values.

After leaving the room, the system will switch off all the lights - entering the room again will re-enable daylight regulation. The scene is not automatically recalled.

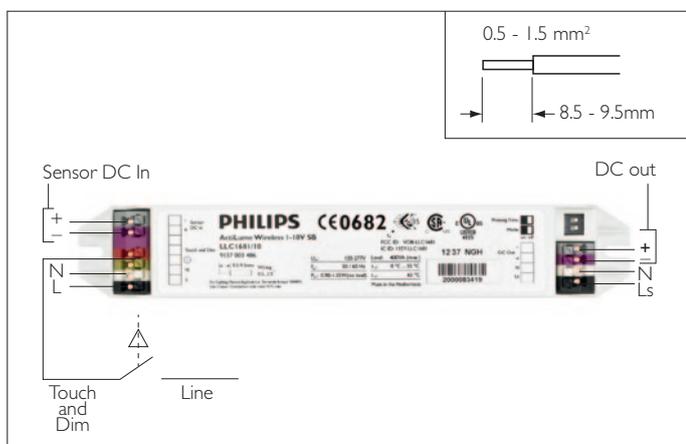
Commissioning the system is also done with the remote - see the commissioning section below.



Installation of System in Luminaire

Sensor

- When the sensor is clipped on the lamp or attached to optics (distance between sensor and lamp is less than 8cm), the sensor should be located at the cold side of the lamp (wired by the long lead wires of the ballast).
- If the sensor is placed in the housing of the luminaire or clipped onto the lamp, a distance of at least 8 cm should be maintained between sensor and the electrically “warm” lamp-end (the lamp-end to which the short wires are connected).



Philips offers a range of accessories which can be used to mount the sensor in the Luminaires (see also datasheet ActiLume I-10V):

LCA8001/00 Ring for cover set of 100pce	9137 003 38303
LCA8002/00 ActiLume Clip TL5 set 50pce	9137 003 40803
LCA8003/00 ActiLume Clip TL-D set 50pce	9137 003 40903
LCA8005/00 ActiLume Mounting Clip 50pce	9137 003 48803

Controller

The color coding of the connectors (WAGO250) are in line with UL requirements (UL pending).The switch box has to be built in a luminaire - see drawing. The antenna of the RF module is on the RF board within the plastic housing.To ensure a good reception of the RF signal, sufficient gaps should be available to allow the RF signal to go in and out of the luminaire. For further guidance, consult the Application guide for Luminaire manufacturers.

Commissioning the system

The first step of commissioning a system in a room is to define which wireless devices are present in the application area: Creating a Room. Next, the devices in the room can be grouped into zones: Creating a Zone

The wireless devices can be luminaires with the ActiLume wireless I-10V SB (with or without an ActiLume I-10V sensor) and Sensor(s) of the OccuSwitch Wireless Family (LRM1763/10, LRM1770/10,LRM1775/10,1765/10) or the OccuSwitch Wireless Actuator Block (LRA 1750/10). It is important that the devices all have the /1x or higher in the naming string.

An important difference between linking the OccuSwitch Wireless products and the ActiLume Wireless is the linking method:

- OccuSwitch wireless devices can be linked using the Link button on each device (button linking)
- ActiLume Wireless devices do not have a Link button, as they are mounted into a luminaire. Therefore a system with ActiLume Wireless devices mixed with OccuSwitch Wireless devices has to be linked using a remote and the link button on the devices, where the remote selects devices based on their proximity (proximity linking).

Entering Commissioning mode

Entering the commissioning mode on a Multi Scene Remote (UID8410/10) is done by pressing the “scene 1” and the “I (on)” button together for 3 seconds. The remote confirms this with a sound and the scene buttons (“scene 1”, “scene 2” and “scene 3”) on the remote start to blink, to indicate it is in commissioning mode.

Creating a Room - adding Luminaires with ActiLume wireless devices.

The first step of commissioning a system in a room is to define which wireless devices are present in the application area: creating a room. To create a room, make sure that the remote is in commissioning mode (see above), then press the “scene 1” button.

One of the wireless devices will identify itself by blinking. Press the ON “I” button to add this device to the room. After it has been added, the remote plays the success sound and the device that has just been linked dims down to its lowest dim level (non-dimmable devices are switched off) to show that it has been added to the network. The next device (but not yet in the network) will then identify itself by blinking. Repeat the procedure, adding each device to the network.

If you want to skip a device or you do not see any light blinking (a light in an adjacent room may be blinking), press one of the arrow buttons “>” on the remote to select the next device. Press “scene 2” or “scene 3” to leave the room commissioning menu. All the scene buttons on the remote control start to blink.

Press “O” (Off) to close the commissioning menu.

After creating a system with all devices in the room, the system is operational. Occupancy detected on one device causes all devices in the room to turn on. More advanced occupancy control with zones is possible; see the Creating Zones section below.

Creating a Room - adding OccuSwitch wireless sensors or actuator blocks

Adding OccuSwitch Wireless actuator block

To add an actuator block the system needs to be in the Room Creation mode. In the same way as an ActiLume Wireless SwitchBox I-10V is being added to the wireless system, the actuator block is added. As soon as the remote control finds the actuator block, a red light on the actuator block will start blinking and the connected lights will be switched on/off. To add the actuator block to the room, the "1" (On) button needs to be pressed.

Adding OccuSwitch Wireless sensors

To add an Occuswitch sensor to the system, the system needs to be in Room Creation mode as mentioned before. To add the sensor to the system, press the link button on the sensor and press "scene 1" button on the remote control. After several seconds, a green light will be visible on the sensor and the remote plays a sound as acknowledgement that the connection has been made.

Creating Zones

A room with a system of wireless devices can be divided into zones. ActiLume luminaires in a zone are in daylight regulation mode when occupancy is detected in the zone. When occupancy is detected outside the zone by other devices in the room, the ActiLume luminaires are at lowest dim level (background level), to prevent dark spots in the room. To create zones in a room, make sure that the remote is in commissioning mode (see above), then press the "scene 2" button. As no zones are created yet, all devices present in the room indicate they are not part of the zone: the dimmable lighting devices go to the lowest dim level; the non-dimmable devices are switched off, OccuSwitch actuator blocks start blink their yellow LEDs.

One of the devices in the network identifies itself (the luminaire starts blinking). Press the "1" button to put the luminaire in the first zone. The remote plays the success sound and the luminaire puts the light at 100% (or in the case of OccuSwitch devices, the green LED lights up) to show that it has been added to the zone.

The next device in the network identifies itself by blinking. Repeat the process for each luminaire that should be part of the zone. Press the arrow button "▷" on the remote to skip the device that is blinking and select another device.

Press "scene 2" again to create a new zone. All the devices already in another zone will switch off. The next device which is not already part of a zone identifies itself. Continue to add devices to the zones as required.

When you finish the room/ zone commissioning, leave the room commissioning menu on the remote by pressing another scene button ("scene 1" or "scene 3") to go back to the main menu, followed by the "0" button to leave the main menu.

Technical data**ActiLume Wireless I-10V Switch Box**

Operation conditions	
Ambient temperature	0°C ... 55°C
Rel. humidity	5% ... 90%, no condensation
Max. allowed temperature	65°C at T _c testpoint
Storage conditions	
Ambient temperature	-25°C ... 70°C
Rel. humidity	5% ... 95% at 25°C
Connections	WAGO 250 connectors
Color coding of connectors	
Inputs	
pink	= I-10V +
gray	= I-10V –
red	= Touch and Dim
white	= mains Neutral
black	= mains Line
Green	= Protected Earth
Outputs	
pink	= I-10V +
gray	= I-10V –
white	= mains Neutral
black	= mains Line
Control signal input	
- I-10V input current	Sourcing 120 µA
- max. input voltage	Protected against accidental mains voltage connection
Control signal output	
- I-10V output	voltage +1 ... +10VDC
- I-10V output	current sinking 20 mA (maximum rating)
- Max. switching capacity	400VA
Input voltage range	
- Nominal range	120 ... 277V
- Performance range (-8% / +6%)	110 ... 294V
- Safety range (-10% / +10%)	108 ... 305V
Input mains frequency range	
- Nominal range	50 ... 60Hz
- Performance range (-8% / +6%)	46 ... 64Hz
- Safety range (-10% / +10%)	45 ... 66Hz
Approvals/markings	CE, ENEC, FCC, CSA, UL
Wireless Communication	ZigBee PRO standard (IEEE 802.15.4, WPAN)
EMC	According to EU EMC directive 2004/108/EC
Compliance IEC	IEC61347-2-11 / IEC60598-1
Immunity	ETSI EN 301-489-1/301-489-3
Emission	ETSI EN 301-489-1/301-489-3
R&TTe	EN55022 Class B
	According to Directive 1995/5/EC
	Applicable standard EN 300 328
	VI.7.1
Housing material	Polyphenylene Oxide (PPHOX), Noryl PX9406 by Sabic, UL94V-0
Glow wire test	850°C/30sec
Color housing	White (WH8581)
Weight/dimensions	Approx. 51 grams/180x30x22 mm

Data ActiLume I-10V Sensor

Environmental conditions	
Operation conditions	
Ambient temperature	5°C ... 55°C
Rel. humidity	5% ... 90%, no condensation
Max. allowed temperature	55°C Anywhere on the sensor housing
Storage conditions	
Ambient temperature	-25°C ... 70°C
Rel. humidity	5% ... 95% at 25°C
Safety	
When connected to the control input of a Philips HFR ballast, the sensor has double isolation to mains connected parts.	
Connection	2x0.5mm ² , flying leads (PVC free), length 1 meter.
Color coding of cable	pink +, grey – When wrongly connected to the ballast dim input, the ballast input is short circuited, resulting in minimum light output.
Housing material	Polycarbonate UL94V-0
Color bottom part	Ultra Dark Grey (similar to RAL 7024)
Color cover part	Light Grey (similar to RAL 7035)
Weight/dimensions	Approx. 25 grams, 47x19x19 mm
EMC According to	
- operating voltage	+2.5 ... +10Vdc
- operating current	sinking 100µA ... 3mA (sufficient for 20 Philips HFR ballasts)
- control voltage variation	< 0.7V over current and temp. range
- Default setting	5Vdc at 37.5 lux/140µA (factory calibration tool)
- step response	within 2 sec. on 5V after power-up in case of insufficient ambient light
- max. input voltage	15 Vdc (maximum rating)
- max. current sink	50 mA (maximum rating)
Optical characteristics	- It is assumed that the reflection in a room is such that a light level of 500 lux on a table (0.8mtr in height) will result in 25 lux seen by the controller at ceiling height (2.5 mtr) under a viewing angle of 45°
	- The opening angle can be adapted by the diaphragm control, realizing an attenuation factor between 1/3 and 3.

Packing data

Type	Box dimensions (cm)	Qty	Material	Weight (Kg)	
				net	gross
LRI1655/00 ActiLume I-10V sensor 100cm	20 x 17.5 x 11	12	Cardboard	0.300	0.504
LLC1681/10 ActiLume Wireless I-10V SB	19 x 19 x 7	12	Cardboard	0.840	0.996
UID8410/10 Wireless Scene Remote HH	17 x 11 x 8	1	Cardboard	0.100	0.337
LCA8001/00 Ring for cover set of 100pce	22 x 10 x 7	100	Cardboard	0.150	0.221
LCA8002/00 ActiLume Clip TL5 set 50pce	22 x 10 x 7	50	Cardboard	0.429	0.500
LCA8003/00 ActiLume Clip TL-D set 50pce	22 x 10 x 7	50	Cardboard	0.429	0.500
LCA8004/00 Cover LumBas ExtSensor 50pce	22 x 10 x 7	50	Cardboard	0.186	0.218
LCA8005/00 ActiLume Mounting Clip 50pce	22 x 10 x 7	50	Cardboard	0.780	0.810
LRA1750/10 Wireless Universal Actuator	17 x 5 x 5	1	Cardboard	0.155	0.200
LRM1763/10 OS Wireless Multi Sensor	11 x 6 x 9	1	Cardboard	0.060	0.117
LRM1765/10 OS Wireless Corridor sensor	11 x 9 x 6	1	Cardboard	0.063	0.155
LRM1770/10 OS Wireless Corner sensor	11 x 9 x 6	1	Cardboard	0.063	0.155
LRM1775/10 OS Wireless Wall sensor	11 x 9 x 6	1	Cardboard	0.063	0.155

Ordering Data

Type	MOQ	Ordering number	EAN code level 1	EAN code level 3	EOC
LRI1655/00 ActiLume I-10V sensor 100cm	12	9137 003 39503	8727900 942989	8727900 942996	942989 00
LLC1681/10 ActiLume Wireless I-10V SB	12	9137 003 48603	8718291 245933	8718291 245940	245933 00
UID8410/10 Wireless Scene Remote HH	1	9137 003 52303	8718291 256694	8718291 256700	256694 00
LCA8001/00 Ring for cover set of 100pce	1	9137 003 38303	8727900 882780	8727900 882797	882780 00
LCA8002/00 ActiLume Clip TL5 set 50pce	1	9137 003 40803	8727900 952940	8727900 952957	952940 00
LCA8003/00 ActiLume Clip TL-D set 50pce	1	9137 003 40903	8727900 952988	8727900 952995	952988 00
LCA8004/00 Cover LumBas ExtSensor 50pce	1	9137 003 43803	8718291 139386	8718291 139393	139386 00
LCA8005/00 ActiLume Mounting Clip 50pce	1	9137 003 48803	8718291 196242	8718291 196259	196242 00
LRA1750/10 Wireless Universal Actuator	1	9137 003 52903	8718291 225775	8718291 225782	225775 00
LRM1763/10 OS Wireless Multi Sensor	1	9137 003 53003	8718291 225751	8718291 225768	225751 00
LRM1765/10 OS Wireless Corridor sensor	1	9137 003 52003	8718291 250654	8718291 250661	250654 00
LRM1770/10 OS Wireless Corner sensor	1	9137 003 51603	8718291 250616	8718291 250623	250616 00
LRM1775/10 OS Wireless Wall sensor	1	9137 003 51803	8718291 250630	8718291 250647	250630 00

15 Load connection table LLC1681/10

Below you will find a table showing the number of Philips HF-Regulator ballasts that can be connected to the switched mains output of one LLC1681/00 ActiLume Wireless I-10V SwitchBox.

Type of ballast	# of ballasts
HF-R 1 14-35 TL5 EII	7
HF-R 1 26-42 PL-T/C EII	7
HF-R 1 18 PL-T/C EII	7
HF-R 1 18 TLD EII	7
HF-R 1 24 TL5/PL-L EII	7
HF-R 1 36 PL-L EII	7
HF-R 1 36 TLD EII	7
HF-R 1 39 TL5 EII	7
HF-R 1 40 PL-L EII	7
HF-R 1 49 TL5 EII	7
HF-R 1 54 TL5 EII	7
HF-R 1 55 PL-L EII	7
HF-R 1 58 TLD EII	7
HF-R 1 80 TL5/PL-L EII	3
HF-R 2 14-35 TL5 EII	3
HF-R 2 26-42 PL-T/C EII	3
HF-R 2 18 PL-T/C EII	7
HF-R 2 18 TLD EII	3
HF-R 2 24 TL5/PL-L EII	7
HF-R 2 36 PL-L EII	3
HF-R 2 36 TLD EII	3
HF-R 2 39 TL5 EII	3
HF-R 2 40 PL-L EII	3
HF-R 2 49 TL5 EII	3
HF-R 2 54 TL5 EII	3
HF-R 2 55 PL-L EII	3
HF-R 2 58 TLD EII	3
HF-R 2 80 TL5/PL-L EII	2
HF-R 3 14 TL5 EII	7
HF-R 3 18 TLD EII	7
HF-R 3 24 TL5/PL-L EII	3
HF-R 3 41 4 TL5 EII	7
HF-R 3 18 TLD EII	3
HF-R 3 24 TL5/PL-L EII	3
HF-R Es 1 14-35 TL5	3
HF-R Es 2 14-35 TL5	3
HF-R Es 1 49 TL5	3
HF-R Es 2 49 TL5	3
HF-R Es 1 54 TL5	3
HF-R Es 2 54 TL5	3

Number (#) of ballasts that can be connected to one LLC16815/00 ActiLume Wireless I-10V SwitchBox

Q1: If I enter the room, the lights switch on, off and back on again. Why is that?

A1: This is a signal from the system that the battery in one of the devices is almost empty and should be replaced.

Q2: How many devices can be replaced at the same time?

A2: If a system contains 16 devices (ActiLume Wireless SwitchBox's + Actuator Blocks + wireless sensors), all devices to be replaced, must be replaced one by one at an interval of 2 hours.

Q3: I have a system consisting of 2 switchboxes and 1 extension sensor and each time I come in the room the switch on-off-on. What is wrong?

A3: The system is giving a warning that the battery of the extension sensor is nearly end of life. Replacing the battery will resolve the switching.

Q4: Can it communicate with my smart phone or computer?

A4: No, the system cannot communicate with any other device than a wireless device from its own range. The communication is done via a closed, encrypted protocol.

Q5: Can the system interfere other communication protocols?

A5: No, since the ActiLume Wireless system uses ZigBee it cannot interfere or be interfered by other systems using WiFi or other protocols. If another ZigBee system is in the neighborhood, one of them will simply change over to a different transmission channel within the 2.4GHz band.

Q6: What are router devices and end devices?

A6: A router device is a wireless component that can send, receive and forward messages. These kind of devices are usually connected to the mains since they must be standby all the time in order to receive any message whenever it is being transmitted. An end device is usually powered by batteries, which means that it is most of the time asleep so power consumption is reduced to the minimum. Therefore it cannot receive and forward messages within the system.

Q7: What is the principle of a mesh network?

A7: A mesh network is a network of multiple devices in which every router device can communicate (send and receive) to any other router device. If a direct transmission is obstructed, or if one of the router devices fails, the signal will be routed through one or more of the other routers (see also chapter 12 - How does a wireless network function).

Q8: Is it possible to use different manufacturer ZigBee components within this wireless system?

A8: No, it is not possible since the system is a Philips closed system. This to prevent possible problems and incompatibility with these other brand devices.

Q9: Can I still dim up and down when activation the 100 hour burn in is activated?

A9: Yes, it is still possible to dim up and down the lights manually. Only the automatic daylight regulation is disabled. HENCE: when overriding this automatic behavior by manual control, this means that the lamps will not be burned in as it should and resulting in possibly early endblackening of the lamps.

Q10: Can I commission a system by means of the Touch and Dim input of the ActiLume Wireless I-10V controller?

A10: No, it is not possible to commission with the Touch and Dim input. The Touch and Dim input is only for local control of the lights connected to the ActiLume Wireless. This signal is also not transmitted to other devices.

Q11: If I use the Touch and Dim interface on the ActiLume Wireless I-10V SwitchBox, is this signal forwarded to the other devices in the wireless system?

A11: No, Touch and Dim is a possibility to locally change the light level. Local changes will not be transferred to other devices.

Q12: What is the average battery life of extension sensors and the remote control?

A12: On average the battery will have live time of 10 years in an extension sensor and 2 years in a remote control.

17 Abbreviations

Abbreviations used throughout this document are in alphabetical order:

DB = Daughter Board

DO = Daylight Override

DRg = Dim Ring

DR = Daylight Regulation

flash = The button or device is flashing

light = The button is permanently on

MB = Mother Board

PD = Presence Detection

PT = Philips Tune will be played

PLT = Prolong Time

RC = Remote Control

RD = Riddle Down, meaning a sound will be played by the remote control of which the tone will go from high to low

RU = Riddle Up, meaning a sound will be played by the remote control of which the tone will go from low to high

SB = Scene Button

SN = Select next

SP = Select previous

touch = Touch this (these) button(s) on the remote control

= No action to be taken



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