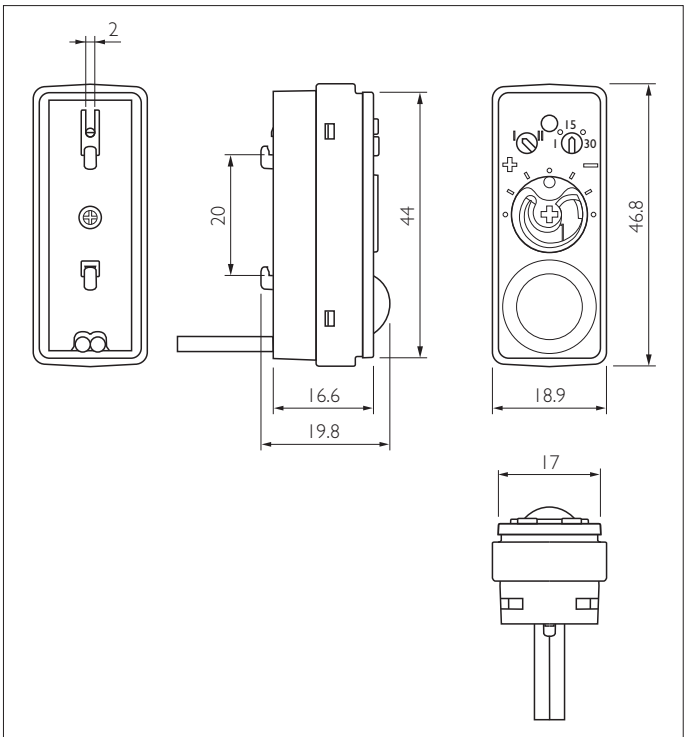


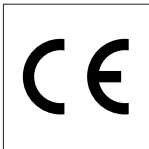
Dimensions LLC1681110 ActiLume Wireless I-10V SB

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 LRI1655/00 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

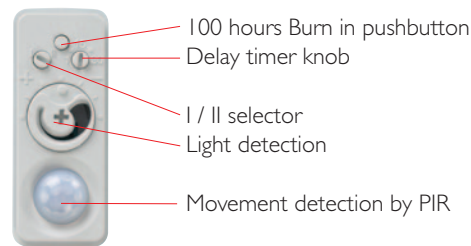
The ActiLume I-10V sensor is to be connected to the ActiLume Wireless I-10V Switch Box.

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.

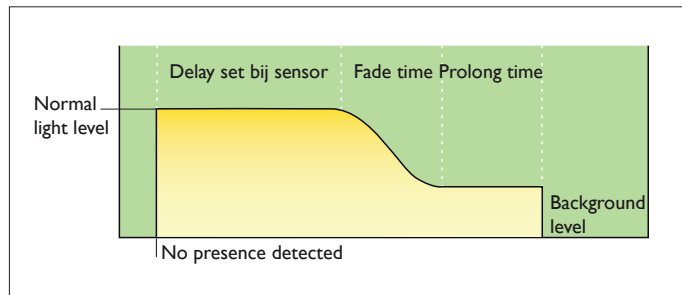
### Application limitations

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:

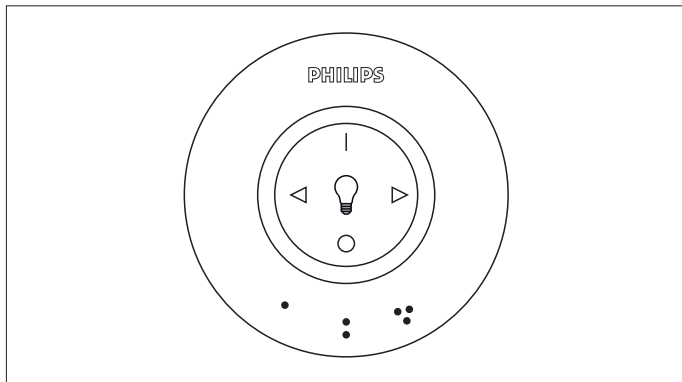
- The lights in the room can be switched on and off using the 1 and 0 buttons
- In a room with dimmable lights, the dim level can be set by touching the dim ring at the required level.

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.

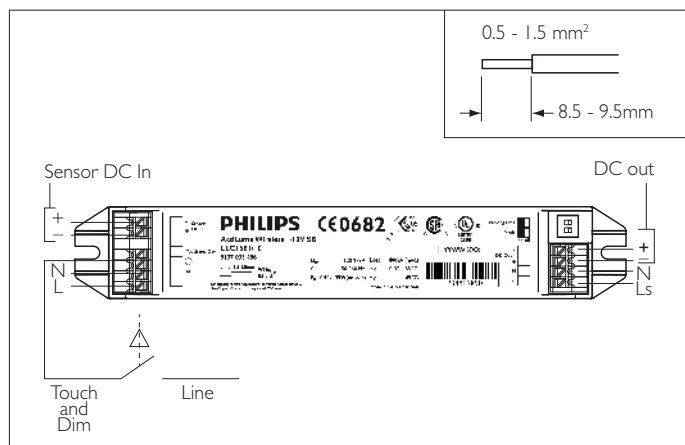
Commissioning the system is also done with the remote - see the commissioning section below.



## 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, L765/10) 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 "D" 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 a 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-I0V Switch Box

Operation conditions	
Ambient temperature	0°C ... 55°C
Rel. humidity	5% ... 90%, no condensation
Max. allowed temperature	65°C at T <sub>c</sub> 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	Outputs
pink = I-I0V +	pink = I-I0V +
gray = I-I0V –	gray = I-I0V –
red = Touch and Dim	
white = mains Neutral	white = mains Neutral
black = mains Line	black = mains Line
Green = Protected Earth	
Control signal input	
- I-I0V input current	Sourcing 120 µA
- max. input voltage	Protected against accidental mains voltage connection
Control signal output	
- I-I0V output	voltage +I ... +I0VDC
- I-I0V 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 V1.7.1
Housing material	Polyphenylene Oxide (PPHOX), Noryl PX9406 by Sabic, UL94 V-0
Glow wire test	850°C/30sec
Color housing	White (WH8581)
Weight/dimensions	Approx. 51 grams/180x30x22 mm

### Data ActiLume I-I0V 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 <sup>2</sup> , 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 UL94 V-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	CISPR15 Ed. 7.1
- 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
LLCI681/10 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
LLCI681/10 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

09/2012

Data subject to change

[www.philips.com/lightingcontrols](http://www.philips.com/lightingcontrols)