



Dynamic
Lighting
Control

Hytronik range



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Our idea is simple

We can help you lower your energy costs by up to 80% through dynamic lighting control. By adjusting the light to the actual user needs you also significantly reduce the environmental impact of your lighting installation.

Aura is working together with Hytronik to offer a full range of ballasts and control systems. Together we offer turn-key solutions with large energy saving potentials and the unique quality that signifies a solution from Aura.

Combine Hytronik's energy efficient ballasts and control systems with Aura Long Life light sources for maximum energy savings and lowest possible maintenance costs. Aura will of course give a life-time guarantee for the complete solution.

Hytronik Sensor and Lighting Control are experts in HF-detection and dynamic lighting control. Their strengths lie in their R&D capabilities and their ability to develop innovative new products to meet the demand for energy saving solutions. Aura is the exclusive agent for Hytronik in Europe.

For a complete overview of our Long Life light sources and Eco Solutions, see our separate Long Life catalogue.

HYTRONIK[®]



Introduction to lighting control

Lighting control plays a critical role when planning energy efficient lighting installations. Lighting control systems can be used to detect presence and/or daylight level and either turn the lights on and off and/or adjusts the light output up and down to the desired light level.

The result is large energy-saving opportunities and increased flexibility. The goal of an effective control system is to support the lighting application goals, which often translates to eliminating energy waste while providing a productive visual environment.

ENERGY EFFICIENCY

Lighting controls can reduce lighting energy consumption by up to 60%. Controls can both reduce the amount of power drawn by the lighting system during operation and also the number of operating hours, thereby reducing energy consumption.

These cost savings often produce a short payback and a high rate of return for the investment in the new controls.

LIGHTING CONTROL METHODS

The most basic type of lighting controls are: Simple controls (On/Off controls and timer controls)

- Advanced controls (light-level sensors, presence/occupancy detection and daylight-dimming)
- Centralized digital controls like for example DALI systems.

Timer controls do not take into account that daylight differs over the seasons and therefore does not reflect the real need for artificial light. Larger, centralized systems often require a much larger investment and higher maintenance costs. Ideal for many small and medium sized installations are advanced presence and daylight sensors like the range offered by Hytronik.

THE LIGHTING CONTROL SYSTEM

Lighting control systems contain at least two components linked by communication wiring, which is used to transmit control signals, and power wiring, which supplies power.

- Controller with presence and/or daylight sensor
- Ballast

HIGH-FREQUENCY SENSORS

HF-sensors utilize the Doppler principle and radar technology to detect the motion of an object at a certain speed & reflection surface. HF sensors actively scan the detection area and the signals are emitted, then reflected as an echo and received again a moment later – any change in echo means a movement is registered.

WHY USE HF-SENSORS INSTEAD OF INFRARED?

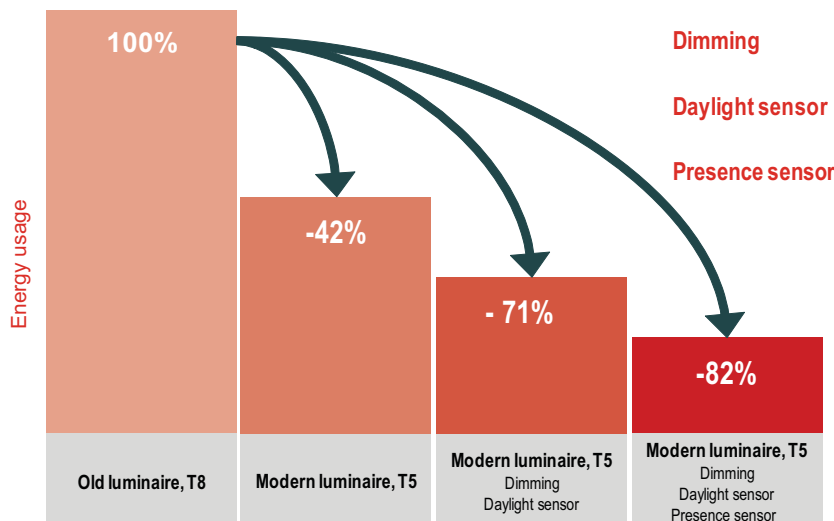
Microwave motion sensors have outstanding benefits in comparison with the traditional infrared sensors.

Microwave motion sensor

- Activated by motion, ie, speed and size.
- Extremely fast detection of even the smallest movement.
- Operates irrespective of ambient temperature
- Detection through non-metal objects. Can therefore be integrated in luminaire, or placed out of sight.
- Stable and reliable.
- Long life-span of at least 50,000 hours.

Infrared motion sensor

- Activated by infrared, ie, heat and light.
- Does not function when the background temperature reaches 35° C.
- Vulnerable to dust and blocking objects.
- Lens ages which reduces sensitivity.
- Short life-span of about 20,000 hours.



New technology significantly reduces energy cost.

Source: Belysningsbranchen, 2009

HYTRONIK HF motion sensors

HYTRONIK sensors use HF technology and they give you dynamic, fully automatic lighting control that matches the real need of artificial light.

The sensors switch on the light only when the surrounding daylight is below the pre-set threshold, and it switches on the lamp at 100% only when there is presence. It then switches off, or dims the lamp to a low light level after the person leaves the detected area.

The HYTRONIK range of lighting controls give you optimum energy savings and minimises your CO2 footprint. Since the initial investment is much smaller than a centrally installed system the payback is also much shorter.

APPLICATIONS

Suitable applications are public areas like corridors, side walks, parking garages, warehouses, industrial areas as well as office areas.

This system has many advantages in comparison with a centralized system, especially for small and medium size lighting installations.

1. Fully automatic.
2. Low initial investment.
3. Easy to upgrade existing lighting installation.
4. Simple installation, simple wiring.
5. Low maintenance costs thanks to the stable performance of HF-technology.



PRODUCT BENEFITS

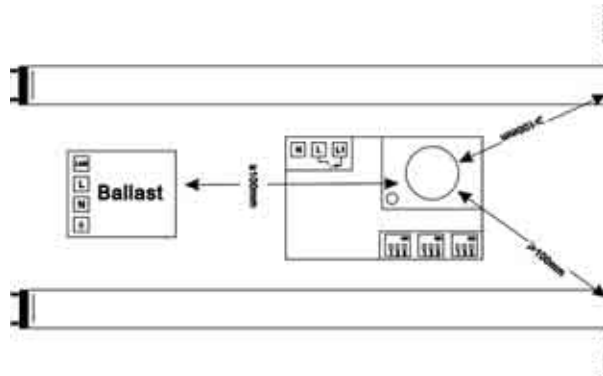
- Made for fully automatic lighting applications.
- Extremely low power consumption. (Standby: 0.6w; operating: 1.2W)
- Provided with both 230v and 1-10v interface for HID, LED & fluorescent lighting control.
- Directional, customized detection angle.
- Working temperature: -35°C – +70°C.
- Extremely low transmission power, <2mw, only 2% of a mobile phone.
- Adjustable daylight threshold to activate the lamp.
- Adjustable detection area makes it possible to choose the most suitable detection angle and distance to fit for each specific application.
- Multiple options on holdtime, stand-by brightness and stand-by period of corridor function.
- Can be enclosed in fixture. No need to keep the sensor sticking out of the fixture thanks to wireless HF-technology which penetrates any non-metal objects.
- Corridor function included in advanced version.



HYTRONIK sensor installation

INSTALLATION

Ballast and lamp filament can affect the detection range. For optimal performance, we recommend to keep the sensor antenna module away from the ballast and lamp filament by at least 80mm (see drawing).



IP65 HOUSING

Enclosed in our specially designed IP65 housing, the sensor is completely protected against dust and water, which makes it suitable for outdoor use.



CONVERTOR

We also offer a converter from 230V to 1-10V signal for applications where you are using 1-10V ballasts.



TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	AURA ART. NO.
IP65 Box for all sensors	HCIP65	IP Box for all sensors	50.000	760906
Convertor	HC005K	Convertor, 230V to 1-10V	50.000	760901

HYTRONIK sensor model names

HYTRONIK	CONTROLLER	SERIES NUMBER	OUTPUT FUNCTION	DETECTION RANGE
H	C	001	S (switch on/off)	/L (long range, 30 m)
		002	F (traffic flow responding)	/R (reinforced version, 20 m)
		003	V (1-10v)	/ (standard version, 10 m)
		008	S (switch on/off)	/H (home version, 5 m)
		010	X (lux control)	/M (medium range, 3 m)



HYTRONIK control gear model names

FLUORESCENT BALLASTS:

HYTRONIK	HF BALLAST	VERSION	NUMBER OF LAMPS	MAX WATT	OUTPUT FUNCTION
H	B	0 (class 1)	1 (1x)	35	/ (non-dimmable)
		1 (class 2)	2 (2x)	42	/ -1 (230V signal)
			4 (4x)	80	/ -A (1-10V signal)
			Etc.		

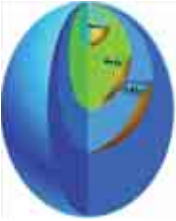
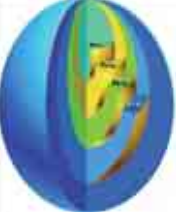
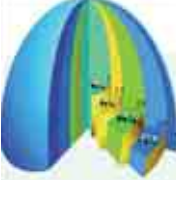
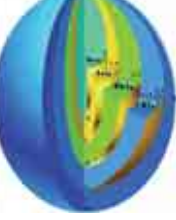
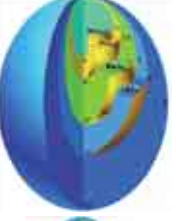
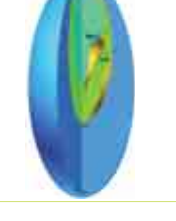



HID & LED CONTROL GEAR:

HYTRONIK	GEAR TYPE	INSTALLATION TYPE	MAX WATT	OUTPUT FUNCTION
H	M (HID ballast)	0 (built in, lead wire)	020	/ (non-dimmable)
	E (LED driver)	1 (built in, terminals)	070	/ -1 (230V signal)
		2 (independent installation)	150	/ -A (1-10V signal)
			Etc.	

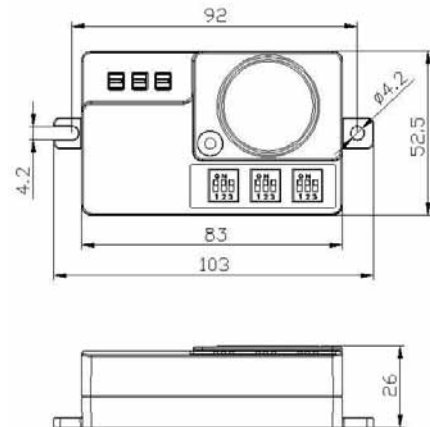
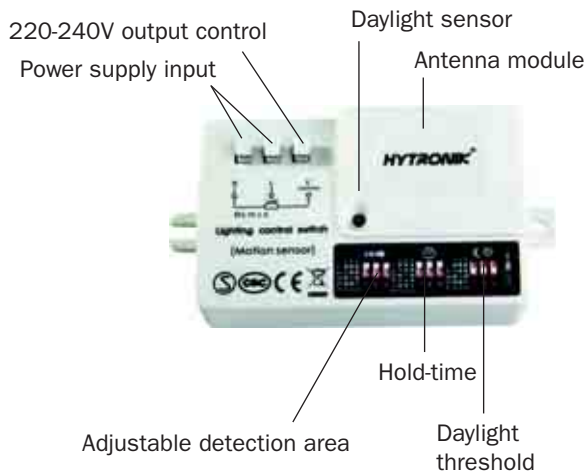


HYTRONIK motion sensor overview

		STANDARD VERSION HC001S	ECONOMY VERSION HC008S
MAX DETECTION RANGE	FUNCTION	<ul style="list-style-type: none"> • 220-240v output signal • On/off function with ordinary ballast; Dimming function with HYTRONIK SensorDIM ballast. • Built-in daylight sensor • Daylight sensor switches on/off motion detection • Multi options on hold-time, daylight threshold, decreased detection angle & area. • Working temp. -35~70°C • Max. load 400W 	<ul style="list-style-type: none"> • 220-240v output signal • On/off function with ordinary ballast; Dimming function with HYTRONIK SensorDIM ballast. • Built-in daylight sensor • Daylight sensor switches on/off motion detection • Multi options on hold-time, daylight threshold, decreased detection angle & area. • Working temp. 0~50°C • Max. load 400w
		<p style="text-align: center;">HC001S /S</p> <p>Suitable for sanitary products like hand-wash, toilet etc., vandal-proof wall switch. Security device.</p>	<p style="text-align: center;">HC008S /S</p> <p>Suitable for sanitary products like hand-wash, toilet etc., vandal-proof wall switch. Security device.</p>
1 METER		<p style="text-align: center;">HC001S /M</p> <p>Suitable for security device</p>	<p style="text-align: center;">HC008S /M</p> <p>Suitable for security device.</p>
3 METERS		<p style="text-align: center;">HC001S /P</p> <p>Presence/occupancy detection. Suitable for lighting control at home, office, garage, corridors.</p>	/
5 METERS		/	<p style="text-align: center;">HC008S /H</p> <p>Suitable for lighting control at home, office, garage, corridors...</p>
5 METERS		<p style="text-align: center;">HC001S</p> <p>Suitable for security & lighting control at home, office, garage, corridors, hallway.</p>	/
10 METERS		<p style="text-align: center;">HC001S /R</p> <p>Suitable for security & lighting control at warehouse, outdoor-garage, industry etc.</p>	/
20 METERS		<p style="text-align: center;">HC001S /L</p> <p>Suitable for security & lighting control at warehouse, outdoor-garage, highway, courtyards etc.</p>	/
30 METERS			/

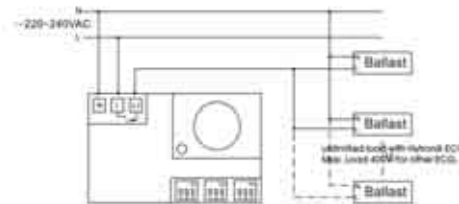
		ADVANCED VERSION HV003V	TRAFFIC FLOW RESPONDING VERSION HC002F
MAX DETECTION RANGE	FUNCTION	<ul style="list-style-type: none"> • Both 1-10v and 220-240v output signal • Dimming function with 1-10V dimmable ballast as well as HYTRONIK SensorDIM ballast. • Detachable daylight sensor • Daylight sensor switches on/off power supply • Multi options on hold-time, stand-by brightness, daylight threshold, decreased detection angle & area. • Working temp. -35~70°C • Max. load 800W • With corridor function 	<ul style="list-style-type: none"> • With 1-10v output signal • Dimming function with 1-10v dimmable ballast. • Detachable daylight sensor • Daylight sensor switches on/off power supply • Multi options on hold-time, initial light output, stand-by brightness, daylight threshold, check-up time segment. • Working temp. -35~70°C • Max. load 800w • Light output reacts according to actual traffic flow.
1 METER		HV003V /S	HC002F /S
		Suitable for security device.	Suitable for security device.
3 METERS		HC003V /M	HC002F /M
		Suitable for security device.	Suitable for security device.
5 METERS		HC003V /P	HC002F /P
		Presence/occupancy detection. Suitable for lighting control at home, office, garage, corridors.	Presence/occupancy detection. Suitable for lighting control at home, office, garage, corridors.
5 METERS		/	/
		/	/
10 METERS		HC003V	HC002F
		Suitable for security & lighting control at home, office, garage, corridors, hallway.	Suitable for security & lighting control at home, office, garage, corridors, hallway.
20 METERS		HC003V /R	HC002F /R
		Suitable for security & lighting control at warehouse, outdoor, garage, industry etc.	Suitable for security & lighting control at office, garage, warehouse, corridors, hallways.
30 METERS		HC003V /L	HC002F /L
		Suitable for security & lighting control at warehouse, outdoor-garage, highway, courtyards etc.	Suitable for road light and outdoor parking area.

Motion sensor, standard version HC001S



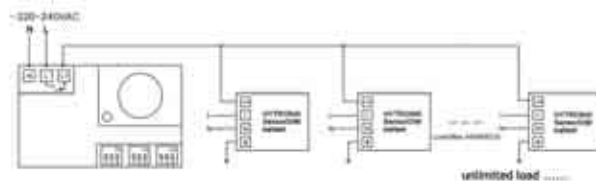
Functions and options

A: SWITCH ON/OFF



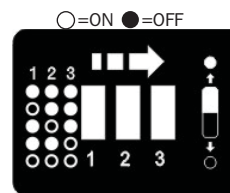
B: DIMMING

The dimming functions only work with HYTRONIK SensorDIM ballasts. HYTRONIK SensorDIM ballasts are available in a wide range of models and wattages for T5, T8, CFL and T5 circular lamps.



C: DETECTION AREA

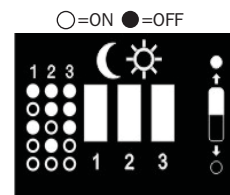
The detection area can be reduced by selecting the appropriate combination on the DIP switches to fit the specific application.



	1	2	3	Recommendation
I	●	●	●	100%
II	○	●	●	75%
III	○	○	●	50%
IV	○	○	○	30%
V	○	○	○	10%

D: DAYLIGHT SENSOR

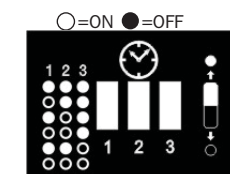
The sensor contains a daylight sensor in order to allow motion detection only below a defined brightness threshold. To set "brightness threshold", select the appropriate DIP switches.



	1	2	3	Recommendation
I	●	●	●	2Lux
II	○	●	●	5Lux
III	○	○	●	20Lux
IV	○	○	○	30Lux
V	○	○	○	Disable

E: HOLD-TIME

Hold-time is the time period you would like to keep the lamp on 100% after the last person has left the detection area.



	1	2	3	Recommendation
I	●	●	●	5s
II	○	●	●	30s
III	○	○	●	3min.
IV	○	○	○	5min.
V	○	○	○	15min
VI	○	○	○	25min

Technical Data

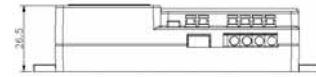
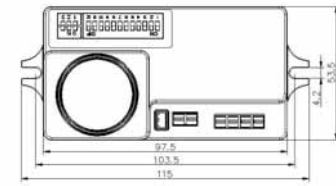
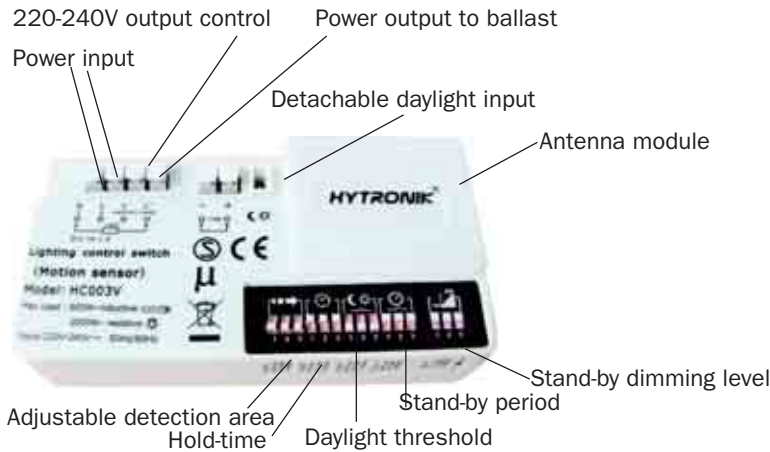
Operating voltage	220-240V±10%, 50/60Hz, 100-127V±10% on request
Switched power	1000W (resistive load), 400W (inductive load)
Standby power	0.6W (standby), 1.2W (operation)
Detection area	10 / 30 / 50 / 75 / 100%, can be customized
Hold time	5s/30s/180s/300s/15min/25min, can be customized
Daylight threshold	2—500 lux can be customized
Sensor type	HF motion detector
HF/Microwave frequency	5.8 GHz +/- 75 MHz
HF/Microwave power	<1mw, varies in different models
Detection range	1 - 30m, varies in different models
Detection angle	30 - 150°, varies in different models
Motion detection	1-20km/h (<3m mounting height); 1-200km/h (>5m mounting height)
Mounting height	0.5 - 20m, varies on different models
Operating temperature	-35°C ~ +70°C
IP rating	IP 20 (mounting inside a luminary); IP 65 (in HYTRONIK IP65 box)

AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	PACK UNITS (PCS)
760101	Standard	HC001S /S	Detection range 1m	50 000	140
760103	Standard	HC001S /M	Detection range 3m	50 000	140
760110	Standard	HC001S /	Detection range 10m	50 000	140
760120	Standard	HC001S /R	Detection range 20m	50 000	140
760130	Standard	HC001S /L	Detection range 30m	50 000	140

Compliance and marking (applies to all HYTRONIK sensors)

EU DIRECTIVES:	STANDARDS	SAFETY CERTIFICATION
Nr. 1999/5/EC	IEC61000-4-2 IEC61000-3-2	
Nr. 2004/108/EC	IEC61000-4-3 IEC61000-3-3	
Nr. 73/23/EEC	IEC61000-4-4 EN60669-2-1	
Nr. 2002/95/EC	IEC61000-4-5 EN60669-1	
	IEC61000-4-6 CISPR 14	
	IEC61000-4-8 CISPR 15	
	IEC61000-4-11	

Motion sensor, advanced version HC003V



Functions and options

A: OUTPUT

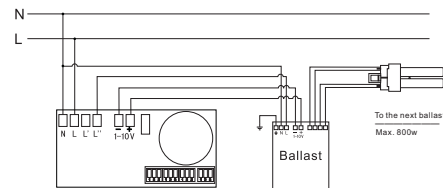
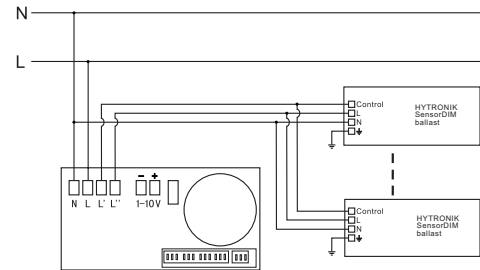
This sensor is equipped with both 1-10v and 220-240v output signal, which means that it can switch ON/OFF all types of lighting installations, and dim fluorescent lamps, HID lamps as well as LED lamps.

1. Dimming function with HYTRONIK SensorDIM ballast

The dimming functions only work with HYTRONIK SensorDIM ballasts. HYTRONIK SensorDIM ballasts are available in a wide range of models and wattages for T5, T8, CFL and T5 circular lamps.

2. Dimming function with ordinary 1-10v dimmable ballast

These dimming functions work with any ordinary 1-10v analogue dimming ballasts, including T5, T8, CFL and HID lamps.



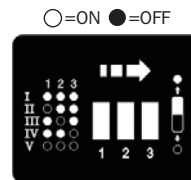
B: CORRIDOR FUNCTION

This function is similar to the Tridonic Excel ballast. HYTRONIK has built in the corridor function inside the motion sensor instead of the ballast. When the surrounding natural daylight reaches the pre-defined threshold value, the sensor drives the lamps to work 100% power when there is presence of human detected. When people leave, the sensor holds the lamp at 100% for the specified hold-time. After the hold-time, it drives the lamp to work on dimmed low light output, and eventually switch off the light after the 2nd specified stand-by period.

The daylight threshold, first hold-time, 2nd stand-by period, and the dimmed low output level can all be easily and specified by the user through the DIP switches on the motion sensor.

C: DETECTION AREA

The detection area can be reduced by selecting the appropriate combination on the DIP switches to fit the specific application.

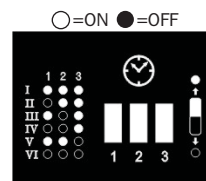


Recommendation

	1	2	3	
I	●	●	●	100%
II	○	●	●	75%
III	○	○	●	50%
IV	○	○	○	30%
V	○	○	○	10%

D: HOLD-TIME

Hold-time means the time period you would like to keep the lamp on 100% after the last person has left the detection area.

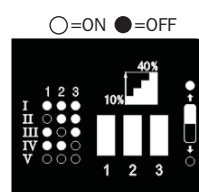


Recommendation

	1	2	3	
I	●	●	●	5s
II	○	●	●	30s
III	○	○	●	3min
IV	○	○	○	5min
V	○	○	○	15min
VI	○	○	○	25min

E: STAND-BY DIMMING LEVEL

This is the dimmed low light output level you would like to have after the hold-time in the absence of people.

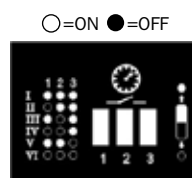


Recommendation

	1	2	3	Output voltage	Dimming level
I	●	●	●	5V	45-50%
II	○	●	●	4V	35-40%
III	○	○	●	3V	25-30%
IV	○	○	○	2V	15-20%
V	○	○	○	1.4V	5-10%

F: STAND-BY PERIOD (corridor function)

This is the time period you would like to keep at the low light output level before it is completely switched off in the long absence of people.

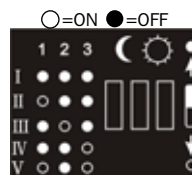


Recommendation

	1	2	3	
I	●	●	●	5min
II	○	●	●	10min
III	●	○	●	20min
IV	○	○	●	40min
V	●	●	○	1h
VI	○	○	○	Disable

G: DETACHABLE DAYLIGHT SENSOR

The advanced motion sensor is delivered with a detachable daylight sensor in order to allow function only below a defined brightness threshold. To set up "brightness threshold" select the appropriate DIP switches.



Recommendation

	1	2	3	
I	●	●	●	200Lux
II	○	●	●	100Lux
III	●	○	●	50Lux
IV	●	●	○	20Lux
V	○	○	○	5Lux

WHY DETACHABLE?

Sensors are often used inside the fixture, very close to the lamps. The artificial light produced by the lamps can easily be interpreted by the daylight sensor as natural daylight. To avoid such problems, it is necessary to put the daylight sensor outside the fixture, so that it only takes in and measures natural daylight, and ignores the artificial light produced by the lamp. Then the fixture reacts correctly to the level of natural daylight.

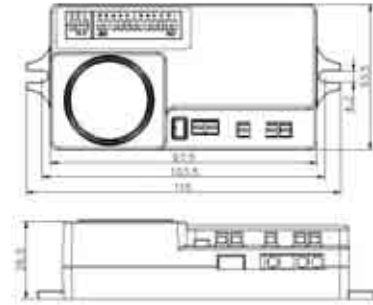
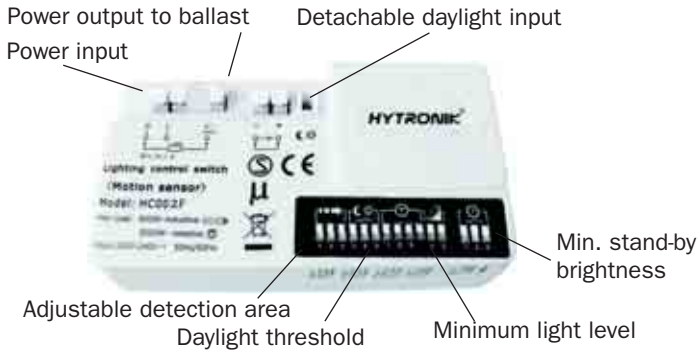


Technical Data

Operating voltage	220-240V±10%, 50/60Hz, 100-127V±10% on request
Switched power	2500W (resistive load), 800W (inductive load)
Standby power	<1W
Detection area	10 / 30 / 50 / 75 / 100%, can be customized
Hold time	5s/30s/180s/300s/15min/25min, can be customized
Daylight threshold	2 - 500 lux
Sensor principle	HF motion detector
HF/Microwave frequency	5.8 GHz +/- 75 MHz
HF/Microwave power	<1mw, varies in different models
Detection range	1 - 30m, varies in different models
Detection angle	30 - 150°, varies in different models
Motion detection	1-20km/h (<3m mounting height); 1-200km/h (>5m mounting height)
Mounting height	0.5 - 20m, varies in different models
Operating temperature	-35°C ~ +70°C
IP rating	IP 20 (mounting inside a luminary); IP 65 (in HYTRONIK IP65 box)

AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	PACK UNITS (PCS)
760301	Advanced	HC003V /S	Detection range 1m	50 000	100
760303	Advanced	HC003V /M	Detection range 3m	50 000	100
760310	Advanced	HC003V	Detection range 10m	50 000	100
760320	Advanced	HC003V /R	Detection range 20m	50 000	100
760330	Advanced	HC003V /L	Detection range 30m	50 000	100

Motion sensor, traffic flow version HC002F



This sensor is designed for automatic lighting control in highways, street lights, tunnels, corridors etc. It provides dynamic lighting control to match the actual traffic flow.

The sensor drives the ballast to work on the customer specified min. stand-by brightness (10%, for example) when there is no presence and the surrounding natural daylight is below the target threshold, then drives the lamp to work on 40-100% light output when presence is detected, and finally to go back to 10% again when no presence is detected.

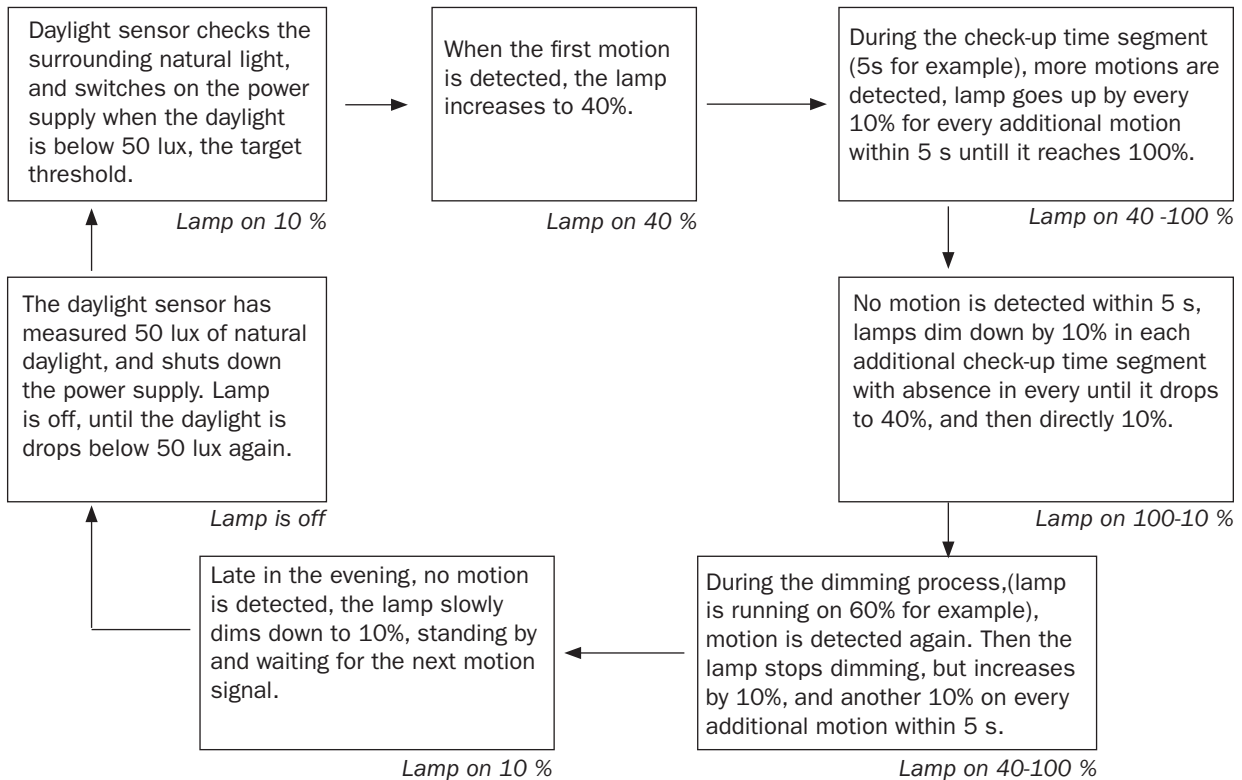
The actual lighting level is in proportion to the actual traffic flow. The lamp starts on 40% when the first movement is detected, and gradually goes up by 10% on each additional movement during the defined check-up

time segment (from 0.5s to 10 min.) until it reaches 100%. And vice versa, when there is no presence of humans or cars detected within the check-up time segment, the lamp goes down by 10% on every elapse of the check-up time segment.

However, the dimming down progress is interrupted by motion. If motion is detected, the light stops going down further, instead it increases by 10% (1 motion in the check-up time segment), and another 10% (2 motions in the check-up time segment), and further 10% (3 motions in the check-up time segment) etc.

This intelligent system saves every possible watt, and at the same time provides the best possible comfort and safety.

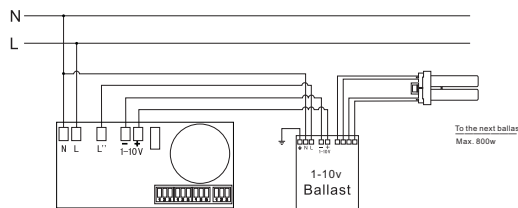
A TYPICAL LIGHTING APPLICATION IN A CORRIDOR:



In the above scenario, the selected values are: Daylight threshold – 50 lux; Min. Light output – 10%; Initial light output – +30%; Check-up time segment – 5 seconds.

A: OUTPUT

The dimming functions work with all ordinary 1-10v analogue dimming ballasts, including T5 and T8 fluorescent lamps and HID lamps.



B: DETECTION AREA

The detection area can be reduced by selecting the appropriate combination on the DIP switches to fit the specific application.

○=ON ●=OFF

	1	2	3	
I	●	●	●	100%
II	○	●	●	75%
III	○	○	●	50%
IV	○	○	○	30%
V	○	○	○	20%

C: DETACHABLE DAYLIGHT SENSOR

Please refer to page 11 for more detailed information on the benefits of the detachable daylight sensor.

○=ON ●=OFF

	1	2	3	
I	○	○	○	2Lux
II	○	○	○	5Lux
III	○	○	○	20Lux
IV	○	○	○	50Lux
V	○	○	○	100Lux
Γ?	○	○	○	200Lux

D: MINIMUM LIGHT LEVEL

This is the minimum light output level you would like to have in the absence of motion.

○=ON ●=OFF

	1	2	3	
I	○	○	○	10%
II	○	○	○	20%
III	○	○	○	30%
IV	○	○	○	40%

E: CHECK-UP TIME SEGMENT

The check-up time segment is the time period in which the sensor checks and measure the traffic flow.

0.5s - 5s is designed for vehicles, while 6s-10 min. are designed for "human traffic".

○=ON ●=OFF

	1	2	3	4	
I	○	○	○	○	0.5S
II	○	○	○	○	1S
III	○	○	○	○	2S
IV	○	○	○	○	3S
V	○	○	○	○	4S
VI	○	○	○	○	5S
VII	○	○	○	○	10S
VIII	○	○	○	○	20S
IX	○	○	○	○	30S
X	○	○	○	○	60S
XI	○	○	○	○	300S
XII	○	○	○	○	600S

F: INITIAL LIGHT OUTPUT

The initial light output means the percentage of light you want to dim to from the minimum lighting level. For example:

1. For fluorescent lamp applications, often you want to have a minimum light level of 10%, and jump to 40% directly when motion is detected. In this case, you should set the minimum light level to 10%, and the initial light output at 30%.

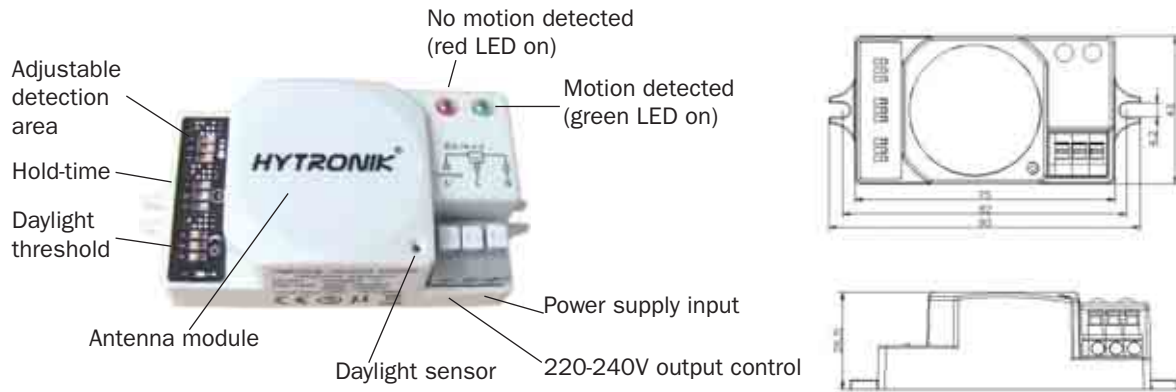
2. For HID lamps, you need a minimum level at 50%. Then you can set the minimum light level at 50%, and set the initial light output at 0%.

○=ON ●=OFF

	1	2	
I	○	○	0%
II	○	○	20%
III	○	○	40%
IV	○	○	50%

AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	PACK UNITS (PCS)
760201	Traffic flow responding version	HC002F	Detection range 1m	50 000	100
760203	Traffic flow responding version	HC002F /M	Detection range 3m	50 000	100
760210	Traffic flow responding version	HC002F	Detection range 10m	50 000	100
760220	Traffic flow responding version	HC002F /R	Detection range 20m	50 000	100
760230	Traffic flow responding version	HC002F /L	Detection range 30m	50 000	100

Motion sensor, economy version HC008S



This sensor has exactly the same functions as the standard version. It is a simplified economy model designed for compact lighting fixtures in indoor applications.

The difference between this model and the standard model are:

Economy version

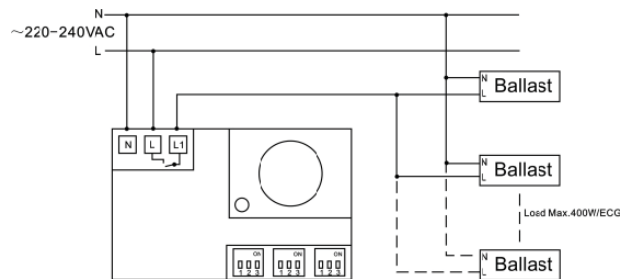
- Working temp. 0°C~+50°C (only indoor applications)
- Detection range max. 5m.
- Very compact size
- Not as sensitive to fast moving objects

Standard version

- Working temp. -35°C~+70°C
- Detection range, up to 30m
- Medium size
- More sensitive to fast moving objects

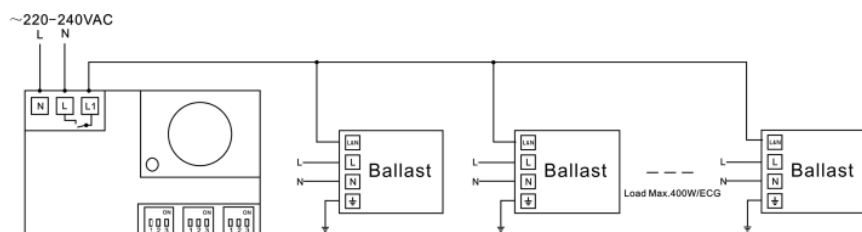
Functions and options

A: SWITCH ON/OFF FUNCTION



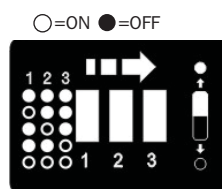
B: DIMMING

The dimming functions only work with HYTRONIK SensorDIM ballasts. HYTRONIK SensorDIM ballasts are available in a wide range of models and wattages for T5, T8, CFL and T5 circular lamps.



C: DETECTION AREA

The detection area can be reduced by selecting the appropriate combination on the DIP switches to fit the specific application.

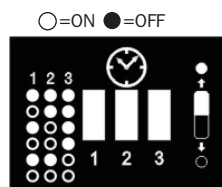


Recommendation

	1	2	3	
I	●	●	●	100%
II	○	●	●	75%
III	●	○	●	50%
IV	●	●	○	30%
V	○	○	○	10%

D: HOLD-TIME

Hold-time is the time period you would like to keep the lamp on 100% after the last person has left the detection area.



Recommendation

	1	2	3	
I	●	●	●	5s
II	○	●	●	30s
III	●	○	●	3min
IV	○	○	●	5min
V	●	●	○	15min
VI	○	○	○	25min

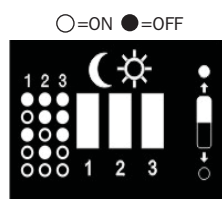
E: DAYLIGHT SENSOR

The sensor contains a daylight sensor in order to allow function only below a defined brightness threshold. To set up “brightness threshold”:

“Daylight”: The lamp works always, even in daylight.

“Twilight”: The lamp works only in twilight and in darkness.

“Darkness”: The lamp works only in darkness.



Recommendation

	1	2	3	
I	●	●	●	2Lux
II	○	●	●	5Lux
III	●	○	●	20Lux
IV	○	●	○	30Lux
V	○	○	○	Disable

Technical Data

Operating voltage	220-240V±10%, 50/60Hz, 100-127V±10% on request
Switched power	800W (resistive load), 400W (inductive load)
Standby power	<1W
Detection area	10 / 30 / 50 / 75 / 100%, can be customized
Hold time	5s/30s/3 min/5 min/15min/25min, can be customized
Daylight threshold	2 - 500 lux daylight / twilight / darkness, can be customized
Sensor principle	HF motion detector
HF/Microwave frequency	5.8 GHz +/- 75 MHz
HF/Microwave power	<1mw, varies on different models
Detection range	Max. 5m
Detection angle	30–150°, varies on different models
Motion detection	1 - 20km/h
Mounting height	3 - 5m
Operating temperature	0°C~+50°C
IP rating	IP 20 (mounting inside a luminary); IP 65 (in HYTRONIK IP65 box)

AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	PACK UNITS (PCS)
760801	Economy	HC008S /S	Detection range 1m	50 000	180
760803	Economy	HC008S /M	Detection range 3m	50 000	180
760805	Economy	HC008S /H	Detection range 5m	50 000	180

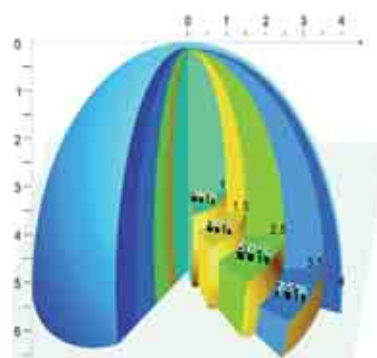
Presence/occupancy detection /P versions

By increasing the detection sensitivity, HYTRONIK /P version presence detector can pick up very tiny movement signal such as typing, reading, conversation etc. This makes it virtually an occupancy detection of human presence.

Max. 5m detection radius and mounting height makes it the perfect occupancy sensor for indoor applications such as office, home, and many other places that require high sensitivity.

The detection area can be adjusted on DIP switches. Unlike ordinary potentiometers, the DIP switches offer very precise values. (min. 1 s for hold-time, 2 lux for daylight threshold, and 1 meter for the detection area).

This precision feature is very important in large installations, where synchrony between sensors is essential.



Technical Data

Operating voltage	220-240V±10%, 50/60Hz, 100-127V±10% on request
Switched power	2500W (resistive load), 800W (inductive load)
Standby power	<1W
Detection area	20 / 30 / 50 / 75 / 100%, can be customized
Hold time	5s/30s/180s/300s/15min/25min, can be customized
Daylight threshold	2- 500 lux daylight / twilight / darkness, can be customized
Sensor principle	HF motion detector
HF/Microwave frequency	5.8 GHz +/- 75 MHz
HF/Microwave power	<1mw, varies in different models
Detection range	Max. 5m
Detection angle	30 - 150°, varies in different models
Motion detection	Very tiny movement such as typing, reading and conversation
Mounting height	Max. 5m, varies on different models
Operating temperature	-35°C~+70°C
IP rating	IP 20 (mounting inside a luminary); IP 65 (in HYTRONIK IP65 box)

AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	PACK UNITS (PCS)
760001	Presence/ occupancy sensor	HC001S /P	Detection range 5m	50 000	140
760003	Presence/ occupancy sensor	HC003V /P	Detection range 5m	50 000	100
760002	Presence/ occupancy sensor	HC002F /P	Detection range 5m	50 000	100

Sensor and ballast combinations

For maximum energy efficiency we need to use artificial light only when and where we need it. A modern lighting control system makes sure that you have the light you need, when you need it.

HYTRONIKs range of lighting controls match the real need of artificial lighting at each point in time. It switches on the light only when the surrounding daylight is below the pre-set threshold, and it switches on the lamp at 100% only when presence is detected. It switches off, or dims the lamp to a minimum level when no presence is detected.

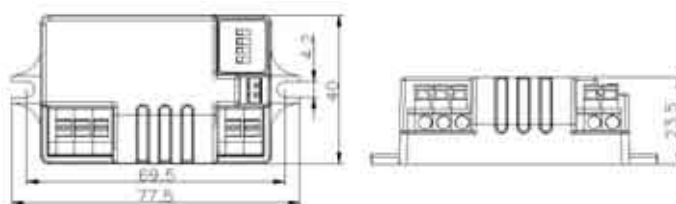
The HYTRONIK lighting control system consists of only two components: A sensor and a dimmable gear. HYTRONIK has a comprehensive range of sensors and control gears. The compability of the sensors and control gears are listed in the chart below.

CONTROL GEAR SENSOR	HYTRONIK SENSOR DIM HF BALLAST	ORDINARY 1-10V HF BALLAST	ORDINARY 1-10V HID BALLAST	ORDINARY NON DIMMABLE HF BALLAST
Standard version HC001S	Dimming	-	-	ON/OFF
Advanced version HC003V	Dimming and Corridor function	Dimming, Corridor function, Constant lux*	Dimming, Corridor function, Constant lux*	ON/OFF
Traffic flow version HC002F	-	Dimming according to traffic flow	Dimming according to traffic flow	-
Economy version HC008S	Dimming	-	-	ON/OFF
Lux Controller HC010X	-	Linear dimming	Linear dimming	-
Any other sensor with 230v output	Dimming	-	-	ON/OFF
Any other sensor with 1-10v output	-	Dimming	Dimming	-

* Constant lux: In combination with the lux controller, you can achieve constant lux, fully automatic lighting control. See next page for details.



Constant lux controller HC010X



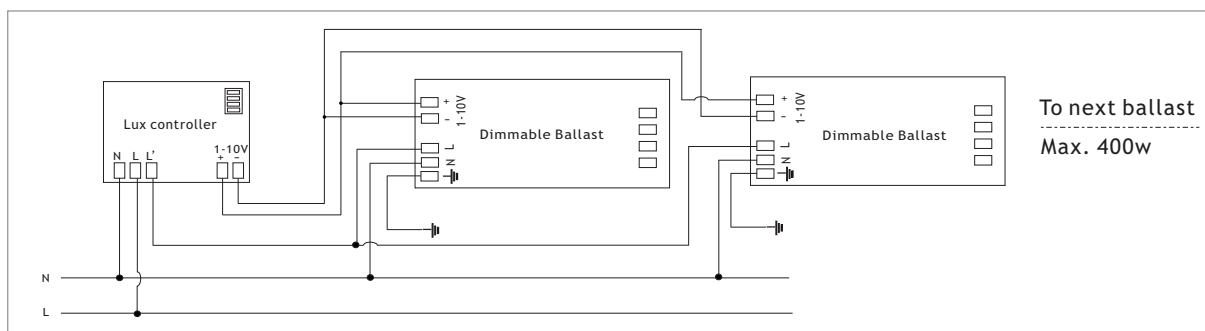
This constant lux controller measures the luminance in the target area through the detachable daylight sensor, and calculates the compensation needed to achieve the total target lux. The amount of compensation is translated into an output signal to the 1-10v dimmable ballast, which then produces the needed compensation of artificial light to keep the target area at the target lux level.

The detachable daylight sensor switches off the power supply automatically when the natural daylight is higher than the target lux value, and switches on again when the natural daylight is below the target lux value.

With the above feature, this sensor is perfect for automatic lighting management system in offices, meeting rooms and outdoor advertising lighting etc.

The target constant lux value can be precisely pre-defined by using the DIP switches, with wide options ranging from 5 to 1000lux. (Can be customized)

A. WIRING SCHEMATIC



B. TARGET LUX VALUE

The recommended values are the most commonly used lighting luminance requirement and legal demand on various applications throughout the world. It has covered most of the needs. However if your need is not on this list, we can tailor-make the values from 5-2000 lux to meet your particular needs.

Recommendation ○=ON ●=OFF

	1	2	3	4	
I	○	●	●	●	50Lux
II	●	○	●	●	100Lux
III	●	●	○	●	200Lux
IV	●	●	●	○	300Lux
V?	●	●	○	○	500Lux
VI?	○	○	○	○	750Lux

B. DETACHABLE DAYLIGHT SENSOR

Sensors are often used inside the fixture, very close to the lamps. The artificial light produced by the lamps can easily be interpreted by the daylight sensor as natural daylight. To avoid such problems, it is necessary to put the daylight sensor outside the fixture, so that it only takes in and measures natural daylight, and ignores the artificial light produced by the lamp. Then the fixture reacts correctly to the level of natural daylight.



Cont.

AURA ART. NO.	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)
761100	HC010X	Lux controller	50 000
761101	HC010X-AT	Detachable daylight sensor & accessories	50 000

Technical Specification

Input: AC 110-277v, 50/60 Hz
Max. Load: 400w inductive
Working temp. -35°C ~+50°C
Output: 1-10v control signal
Empty load consumption: <0.6W
IP grade: IP 20

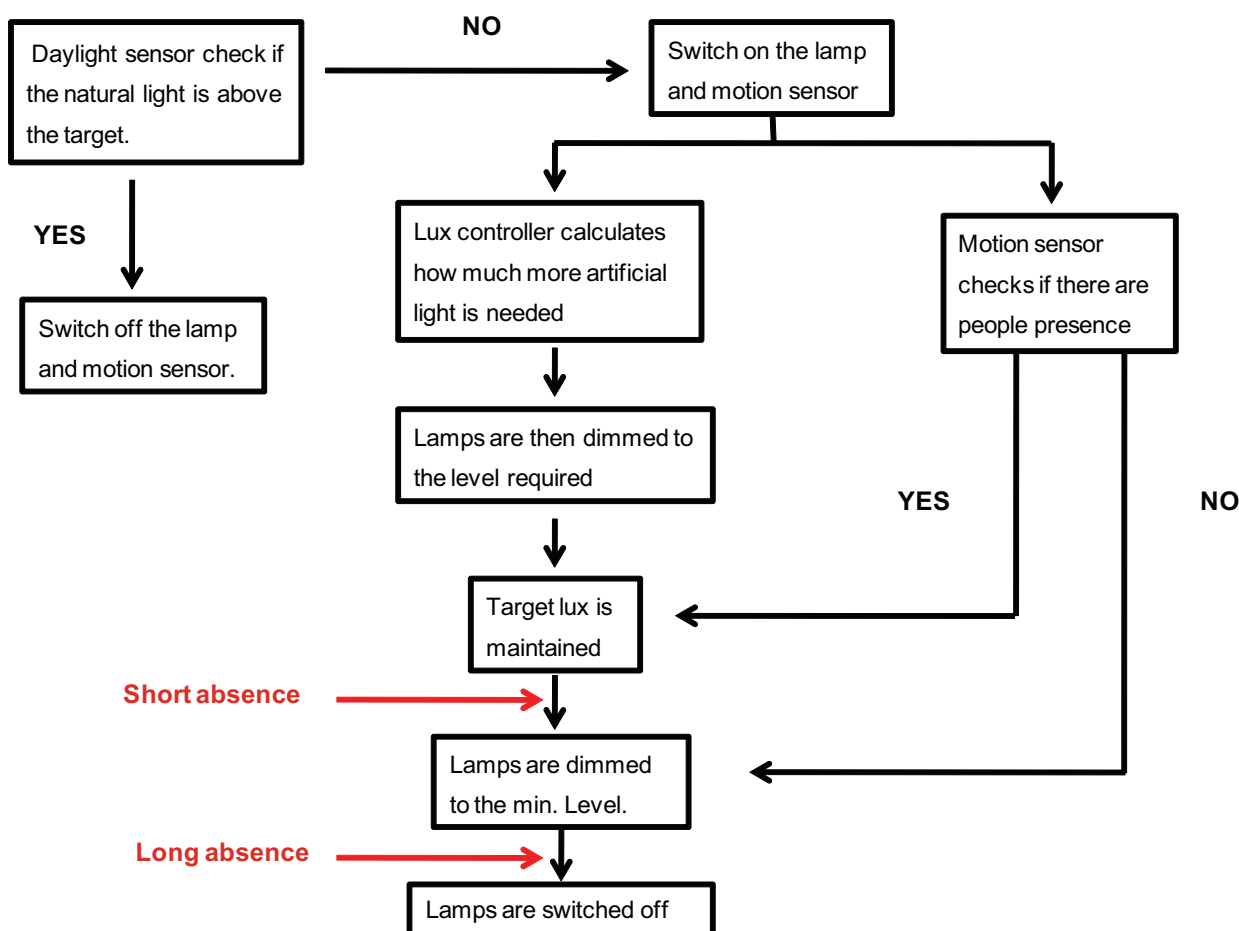
Constant lux control system

- THE ULTIMATE SOLUTION

The ultimate energy saving solution is to combine a daylight sensor, motion detector/presence detector and dimmable ballasts to keep the target area at a fixed lux value when there is presence detected. In this type of system:

1. Natural daylight is measured and counted as the base of illuminance at the target area, while artificial light is a compensation when the natural daylight is below the target lux value.
2. Motion/presence detection is used to switch on the artificial light when presence is detected and switch off, or dim the artificial light to a minimum standby brightness when there is no presence detected.
3. Corridor function is built-in the motion sensor, to switch the light off when there is no human presence for a specified period of time
4. The target lux value can be precisely defined by the DIP switches on the lux controller.

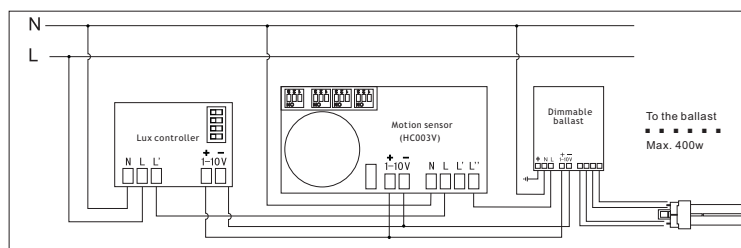
HOW DOES IT WORK?



WIRING SCHEMATIC

The lux controller daylight sensor gives power supply to the motion sensor, and motion sensor gives power supply to the ballast to achieve the corridor function.

The daylight sensor overrides the motion sensor, and the motion sensor decides the hold-time, stand-by period and the stand-by brightness.



SensorDIM[®] fluorescent ballasts

These electronic ballasts are specially designed to work with sensors (motion sensors, infrared sensors, light sensor, sound sensors etc.) that work with a 220-240v continuous output signal. Upon receiving the signal, the ballasts work on full power; when the signal passes out, the ballast works on stand-by mode, at low light output and power consumption.

The ballast compensates the filament current when the fluorescent tubes are working on stand-by dimming mode, which secures that the fluorescent tube immediately reaches its max. brightness when receiving the motion signal. This means that the life span of the fluorescent tubes is not affected by whether the tube is constantly in dimming status, or frequently shifted between full power and dimming status.

It only takes 0.5 seconds for the ballast to shift from stand-by brightness to full power; and 0.2 seconds from full power to stand-by brightness. This transition is soft and comfortable for the human eye.

The stand-by light output and power consumption can be pre-set by choosing the desired combination of the encoded programmed switch

○=ON ●=OFF



	1	2	3	% of full power
I	○	○	○	100%
II	●	○	○	50%
III	●	●	○	25%
IV	●	●	●	10%

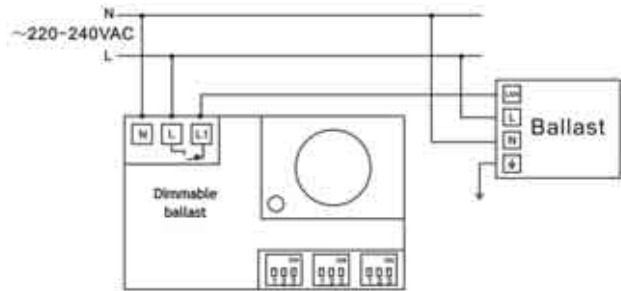
○=ON ●=OFF



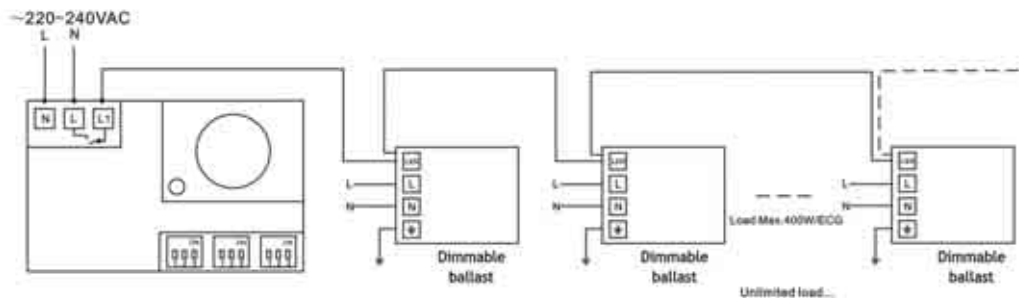
	1	2	3	% of full power
I	○	○	○	100%
II	●	○	○	50%
III	●	●	○	25%
IV	●	●	●	10%

WIRING SCHEMATIC

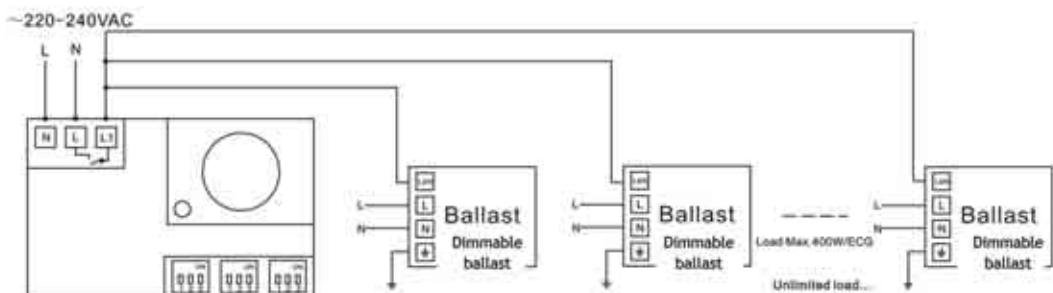
To connect 1 ballast with 1 sensor, the wiring should follow the schematic below:



To connect several ballasts with 1 sensor, the wiring should follow the schematic below:

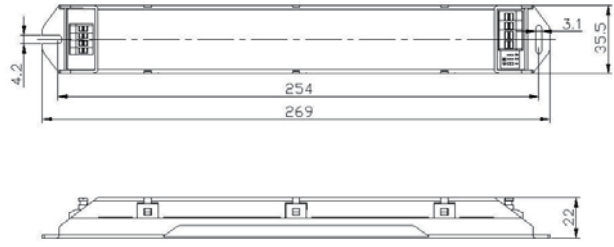


Or like this:



AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70/75)	PACK/ UNITS (pcs)
750112	SensorDIM ballast	HB0135-1	T5 1X14/21/28/35W	42 000	60
750212	SensorDIM ballast	HB0235-1	T5 2X14/21/28/35W	42 000	20
754212	SensorDIM ballast	HB0249-1	T5 2X49W	42 000	20
759112	SensorDIM ballast	HB0142-1	T8 1X18/30/36W, T5 1X24/39W, TCD-E, TCT-E, TCL-E 1X18/24/36W, 1XT2D 28W, T5 Circular 1X22/40W	42 000	60
754132	SensorDIM ballast	HB0142-1 /L40	TCL 1X40W	42 000	60
753102	SensorDIM ballast	HB0142-1 /DD38	T2D 1X38W	42 000	60
759212	SensorDIM ballast	HB0242-1	T8 2X18/30/36W, T5 2X24/39W, TCD-E, TCT-E, TCL-E 2X18/24/36W, T2D 2X28W, T5 Circular 2X22/40W	42 000	50
754232	SensorDIM ballast	HB0242-1 /L40	TCL 2X40W	42 000	50
753202	SensorDIM ballast	HB0242-1 /DD38	T2D 2X38W	42 000	50
757212	SensorDIM ballast	HB0254-1	T5 2X54W	42 000	20
756212	SensorDIM ballast	HB0254-1 /858	T8 2X58W	42 000	20
756232	SensorDIM ballast	HB0254-1 /L55	TCL 2X55W	42 000	20
758212	SensorDIM ballast	HB0280-1	T5 2X80W	42 000	20

DIMMABLE T5 BALLAST
MODEL: HB0135-1
1X14/21/28/35W



The target dimmed light output level and power consumption can be pre-set by choosing the target combination of the encoded programmed switch.

○=ON ●=OFF



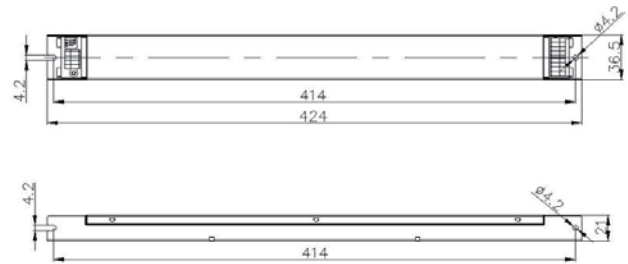
	1	2	3	% of full power
I	○	○	○	100%
II	●	○	○	50%
III	●	●	○	25%
IV	●	●	●	10%

	RUNNING ON 35W LAMP				RUNNING ON 28W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac				220Vac-240Vac			
Frequency	50/60Hz				50/60Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	<0.18A	<0.14A	<0.12A	<0.09A	<0.15A	<0.11A	<0.09A	<0.08A
Power factor	0.98	0.98	0.97	0.97	0.98	0.97	0.96	0.85
Output wattage	35W	17W	8W	3W	28W	14W	7W	2.8W
Lamp voltage	205±10V	240±15V	255±15V	275±20V	164±10V	189±10V	204±15V	240±15V
Lamp current	0.17A	0.102A	0.065A	0.043	0.17A	0.102A	0.065A	0.043
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Ta	-20-50°C				-20-50°C			
Humidity	30-95				30-95			
THD	EN61000-3-2				EN61000-3-2			
EMC directive	EN55015(Version:2007) GB17743-2007 GB17625.1-2007							
Immunity	EN61547				EN61547			
Safety directive	EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A3				EEI=A3			
Life span	50000h				50000h			
Insulation class	I				I			

	RUNNING ON 21W LAMP				RUNNING ON 14W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac				220Vac-240Vac			
Frequency	50/60Hz				50/60Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	<0.11A	<0.09A	<0.08A	<0.07A	<0.08A	<0.08A	<0.07A	<0.06A
Power factor	0.97	0.96	0.95	0.94	0.96	0.95	0.94	0.93
Output wattage	21W	9W	5W	2W	14W	7W	3.5W	1.5W
Lamp voltage	124±10V	138±15V	144±15V	151±20V	85±10V	89±10V	92±15V	96±15V
Lamp current	0.17A	0.102A	0.065A	0.043	0.17A	0.102A	0.065A	0.043
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Ta	-20-50°C				-20-50°C			
Humidity	30-95				30-95			
THD	EN61000-3-2				EN61000-3-2			
EMC directive	EN55015(Version:2007) GB17743-2007 GB17625.1-2007							
Immunity	EN61547				EN61547			
Safety directive	EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A3				EEI=A3			
Life span	50000h				50000h			
Insulation class	I				I			

- Warranty lifetime = 42,000 hours at Tc max
- Defined lamp warm start 1.2S
- Constant light output independent of fluctuations in mains voltage
- AC voltage range 170-270 V
- Power factor > 0.95
- Operating frequency ≥ 42 kHz
- Wide operating temperature range from -20°C to +50°C
- Safe switch off of defective lamps
- Automatic re-start after lamp change
- For luminaires with or and in acc. With EN 60598 / VDE 0710 and VDE 0711
- Suitable for luminaires with safety class I and II
- Ingress protection IP 20
- Thermal protection according to EN 61347-2-3 C5e

DIMMABLE T5 BALLAST
MODEL: HB0235-1
2X14/21/28/35W



○=ON ●=OFF



The target dimmed light output level and power consumption can be pre-set by choosing the target combination of the encoded programmed switch

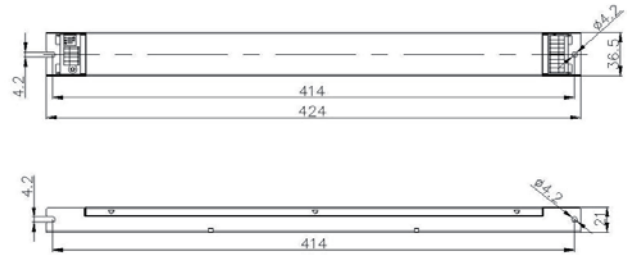
	1	2	3	% of full power
I	○	○	○	100%
II	●	○	○	50%
III	●	●	○	25%
IV	●	●	●	10%

	RUNNING ON 2X35W LAMP				RUNNING ON 2X28W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	<0.36A	<0.23A	<0.16A	<0.1A	<0.27A	<0.17A	<0.13A	<0.065A
Power factor	≥0.99	≥0.98	≥0.97	≥0.85	≥0.99	≥0.98	≥0.97	≥0.85
Output wattage	68W±5%	34W±6%	17W±8%	2.8W±10%	54W±5%	27W±6%	14W±8%	2.4W±10%
Lamp voltage	205±10V	255±15V	275±20V	275±30V	164±10V	204±15V	230±20V	230±20V
Lamp current	164mA±5%	63mA±6%	30mA±8%	5mA±10%	164mA±5%	63mA±6%	30mA±8%	5mA±10%
Ta	-20-50°C	-20-50°C	-20-50°C	10-50°C	-20-50°C	-20-50°C	-20-50°C	10-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version 2007) EN61547 (GB17625.1-2007)				EN55015(Version 2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2003 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2003 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A1				EEI=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

	RUNNING ON 2X21W LAMP				RUNNING ON 2X14W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	<0.22A	<0.15A	<0.1A	<0.06A	<0.1A	<0.09A	<0.08A	<0.06A
Power factor	≥0.99	≥0.98	≥0.97	≥0.85	≥0.98	≥0.97	≥0.96	≥0.85
Output wattage	40W±5%	20W±6%	10W±8%	2W±10%	27W±5%	13.5W±6%	6.5W±6%	1.2W±10%
Lamp voltage	124±10V	144±15V	155±20V	155±30V	85±10V	92±10V	100±20V	110±20V
Lamp current	164mA±5%	63mA±6%	30mA±8%	5mA±10%	164mA±5%	63mA±6%	30mA±8%	5mA±10%
Ta	-20-50°C	-20-50°C	-20-50°C	10-50°C	-20-50°C	-20-50°C	-20-50°C	10-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version 2007) EN61547 (GB17625.1-2007)				EN55015(Version 2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A1				EEI=A1			
Wararnty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

- Warranty lifetime = 42,000 hours at Tc max
- Defined lamp warm start 1.2S
- Constant light output independent of fluctuations in mains voltage
- AC voltage range 170-270 V
- Power factor > 0.95
- Operating frequency ≥ 42 kHz
- Wide operating temperature range from -20°C to +50°C
- Safe switch off of defective lamps
- Automatic re-start after lamp change
- For luminaries with or and in acc. With EN 60598 / VDE 0710 and VDE 0711
- Suitable for luminaries with safety class I and II
- Ingress protection IP 20
- Thermal protection according to EN 61347-2-3 C5e

DIMMABLE T5 BALLAST
MODEL: HB0249-1
2X49W



The target dimmed light output level and power consumption can be pre-set by choosing the target combination of the encoded programmed switch.

	1	2	3	% of full power
I	○	○	○	100%
II	●	○	○	50%
III	●	●	○	25%
IV	●	●	●	10%

○=ON ●=OFF

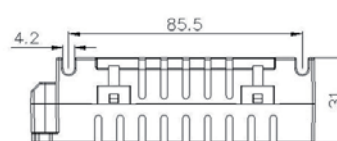
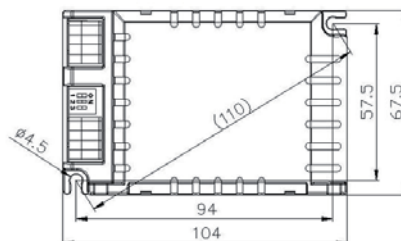


RUNNING ON 2X49W LAMP				
	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz			
Empty load power consumption	<0.8W			
Input current	<0.47A	<0.27A	<0.18A	<0.09A
Power factor	≥0.99	≥0.98	≥0.98	≥0.85
Output wattage	47W±5%	23.5W±5%	12.5W±6%	4.5W±5%
Lamp voltage	195±20V	250±20V	270±20V	<300V
Lamp current	0.25A±5%	0.90A±6%	0.05A±8%	0.005A±10%
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5			
Preheating time	1.2S			
Humidity	30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 (GB19510.4-2005 GB19510.1-2004)			
Abnormal protection	Lamp change, lamp failure, end of life			
Ingress protection	IP20			
Tc	75°C			
Energy efficiency index	EEI=A1			
Warranty lifetime	42,000 h			
Insulation class	I			

DIMMABLE T5, T8 & CFL BALLAST MODEL: HB0142-1



This dimmable ballast is designed to work with a big range of lamps such as T5, T8, TC-TEL/DEL, TC-DD, TC-L/F, T5 circular and T9 circular lamps, in various wattages:



OPERATING ON TC-DEL/TEL

	RUNNING ON 42W LAMP				RUNNING ON 32W LAMP				RUNNING ON 26W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc											
Frequency	50/60Hz or 0Hz											
Empty load power consumption	<0.8W											
Input current	0.22A	0.13A	0.08A	0.05A	0.16A	0.10A	0.07A	0.06A	0.15A	0.09A	0.06A	0.05A
Power factor	0.98	0.98	0.96	0.80	0.98	0.96	0.95	0.70	0.98	0.96	0.93	0.60
Output wattage	42W	21W	10W	2.2W	30W	15W	8W	2.5W	24W	12W	6W	1.2W
Lamp voltage	135	190	220	230	95	140	175	195	80	115	135	150
Lamp current	310mA	110mA	50mA	8mA	310mA	110mA	50mA	8mA	310mA	110mA	50mA	8mA
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5											
Preheating time	1.2S											
Humidity	30-95											
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)											
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005											
Abnormal protection	Lamp change, lamp failure, end of life											
Ingress protection	IP20											
Tc	75°C											
Energy efficiency index	EEL=A1											
Warranty lifetime	42,000 h											
Insulation class	I											

OPERATING ON TC-L/F

	RUNNING ON 36W LAMP				RUNNING ON 24W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Power factor	0.988	0.974	0.954	0.718	0.983	0.964	0.885	0.665
Output wattage	29.2	14.1	7.0	1.1	20.8	10.0	4.6	0.7
Lamp voltage	95.8	132.8	156.1	159.2	68.6	95.2	108.2	113
Lamp current	0.308A	0.110A	0.047A	0.007A	0.311A	0.109A	0.046A	0.006A
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEL=A1				EEL=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

	RUNNING ON 18W LAMP				RUNNING ON 40W LAMP				
	100%	50%	25%	10%	100%	50%	25%	10%	
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc				/
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz				/
Empty load power consumption	<0.8W				<0.8W				/
Power factor	0.972	0.946	0.788	0.636	0.992	0.981	0.967	/	
Output wattage	13.5	6.3	3.1	0.5	38.7	18.2	9.2	/	
Lamp voltage	44.1	61.9	74.5	8.8	128.8	170.1	193.1	/	
Lamp current	0.316A	0.109A	0.045A	0.006A	0.306A	0.111A	0.050A	/	
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	/	
Current crest factor	<1.5				<1.5				
Preheating time	1.2S				1.2S				
Humidity	30-95				30-95				
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)				
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life				
Ingress protection	IP20				IP20				
Tc	75°C				75°C				
Energy efficiency index	EEL=A1				EEL=A1				
Warranty lifetime	42,000 h				42,000 h				
Insulation class	I				I				

NOTE: the min. Dimming level for TC-L/F 40w is 25%. The ballast might shutdown for protection on the load of 10%. However we can also make some adjustment to fit for 10% upon notification advance.

OPERATING ON TC-DDE

	RUNNING ON 38W LAMP				RUNNING ON 28W LAMP							
	100%	50%	25%	10%	100%	50%	25%	10%				
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				/				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				/				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				/				<0.8W			
Power factor	0.987	0.973	0.952	/	0.987	0.973	0.952	0.736				
Output wattage	26.9	13.4	6.5	/	26.9	13.4	6.5	1.2				
Lamp voltage	88.2	125.2	143.2	/	88.2	125.2	143.2	151.8				
Lamp current	0.310A	0.110A	0.047A	/	0.310A	0.110A	0.047A	0.008A				
Ta.	-20-50°C	-20-50°C	-20-50°C	/	-20-50°C	-20-50°C	-20-50°C	-20-50°C				
Current crest factor	<1.5				<1.5							
Preheating time	1.2S				1.2S							
Humidity	30-95				30-95							
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)							
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005							
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life							
Ingress protection	IP20				IP20							
Tc	75°C				75°C							
Energy efficiency index	EEL=A1				EEL=A1							
Warranty lifetime	42,000 h				42,000 h							
Insulation class	I				I							

NOTE: the min. Dimming level for TC-DDE 38w is 25%. The ballast might shutdown for protection on the load of 10%. However we can also make some adjustment to fit for 10% upon notification advance.

OPERATING ON T5 HO LAMP

	RUNNING ON 39W LAMP				RUNNING ON 28W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Power factor	0.981	0.979	0.962	0.78	0.984	0.963	0.889	0.751
Output wattage	34.8	16.8	8.0	1.4	22.6	9.8	4.6	1.2
Lamp voltage	114.3	156.4	176.4	174.5	73.1	93.2	108.4	164.6
Lamp current	0.308A	0.111A	0.048A	0.008A	0.310A	0.109A	0.046A	0.008A
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEL=A1				EEL=A1			
warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

OPERATING ON T8 LAMP

	RUNNING ON 36W LAMP				RUNNING ON 30W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Power factor	0.989	0.972	0.949	0.762	0.988	0.971	0.949	0.723
Output wattage	29.6	13.3	6.1	1.4	28.4	12.4	6.0	1.1
Lamp voltage	97.1	124	133.5	165.2	92.3	115.3	129.7	141.8
Lamp current	0.311A	0.111A	0.048A	0.008A	0.312A	0.111A	0.048A	0.008A
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEL=A1				EEL=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

	RUNNING ON 18W LAMP				RUNNING ON 15W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Power factor	0.978	0.95	0.781	0.637	0.973	0.901	0.771	0.629
Output wattage	16.5	7.1	3.2	0.5	13.7	5.5	2.6	0.4
Lamp voltage	53.8	68.7	74.1	79.3	45	53.8	61.3	70.1
Lamp current	0.316A	0.111A	0.046A	0.006A	0.314A	0.110A	0.046A	0.006A
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEL=A1				EEL=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

OPERATING ON T5 CIRCULAR LAMP

	RUNNING ON 22W LAMP				RUNNING ON 40W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Power factor	0.986	0.961	0.841	0.720	0.989	0.976	0.954	0.785
Output wattage	18.2	9.10	4.80	2.5	31.6	15.3	7.5	3.8
Lamp voltage	60.0	87.6	110.2	132.0	104.3	142.3	164.5	189.0
Lamp current	0.313A	0.111A	0.046A	0.008A	0.310A	0.112A	0.048A	0.010A
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEL=A1				EEL=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

OPERATING ON T9 CIRCULAR LAMP

	RUNNING ON 22W LAMP				RUNNING ON 40W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Power factor	0.978	0.947	0.776	0.721	0.991	0.975	0.950	0.785
Output wattage	16.2	6.5	3.2	2.5	35.7	14.4	6.5	4.5
Lamp voltage	53.5	64.0	70.0	179.1	119.2	135.6	141.6	232.0
Lamp current	0.312A	0.109A	0.056A	0.008A	0.307A	0.111A	0.048A	0.008A
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEL=A1				EEL=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

DIMMABLE T5, T8 & CFL BALLAST MODEL: HB0242-1

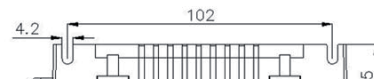
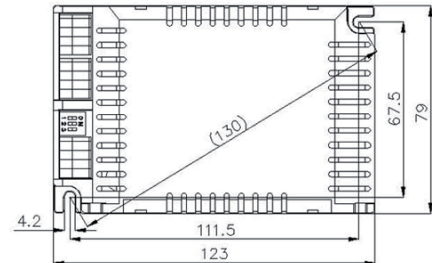


This dimmable ballast is designed to work with a big range of lamps such as T5, T8, TC-TEL/DEL, TC-DD, TC-L/F, T5 circular and T9 circular lamps, in various wattages.

○=ON ●=OFF



	1	2	3	% of full power
I	○	○	○	100%
II	●	○	○	50%
III	●	●	○	25%
IV	●	●	●	10%



OPERATING ON T5 HO LAMP

	RUNNING ON 2X39W LAMP				RUNNING ON 2X24W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	0.319A	0.184A	0.127A	0.095A	0.231A	0.14A	0.101A	0.083A
Power input	71	40.3	26.5	18.4	51.4	29.6	19.9	14.8
Power factor	0.99	0.964	0.918	0.845	0.977	0.932	0.867	0.788
Output wattage	31.90W	14.40W	6.70W	8.3w	22.80W	9.10W	4.3W	5.2w
Lamp voltage	107.8	155.3	171.1	171.5	75.4	99.3	113	121
Lamp current	0.299	0.097	0.04	0.011	0.306	0.097	0.04	0.012
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A1				EEI=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

OPERATING ON TC-DDE

	RUNNING ON 22W LAMP				RUNNING ON 40W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	0.296A	0.167A	0.119A	/	0.296A	0.167A	0.119A	0.084A
Power input	64.2	35	23.9	/	65.2	35	23.9	14.9
Power factor	0.989	0.957	0.909	/	0.989	0.957	0.909	0.809
Output wattage	27.90W	12.40W	5.8W	/	27.90W	12.40W	5.8W	0.80W
Lamp voltage	93.3	133.8	149.4	/	93.3	133.8	149.4	145.9
Lamp current	0.304	0.097	0.04	/	0.304	0.097	0.04	0.006
Ta.	-20-50°C	-20-50°C	-20-50°C	/	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A1				EEI=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

NOTE: the min. Dimming level for TC-DDE 38w is 25%. The ballast might shutdown for protection on the load of 10%. However we can also make some adjustment to fit for 10% upon notification advance.

OPERATING ON T5 CIRCULAR

	RUNNING ON 2X22W LAMP				RUNNING ON 2X40W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	0.207A	0.129A	0.098A	0.076A	0.351A	0.183A	0.125A	0.090A
Power input	44.4W	26.3W	18.7W	12.8W	78.1W	39.4W	25.5W	18.2W
Power factor	0.974	0.925	0.862	0.759	0.992	0.961	0.909	0.852
Output wattage	19.30W	8.50W	4.00W	4.9w	33.30W	15.00W	6.30W	8.9w
Lamp voltage	63.3	92.6	106.2	117.8	105.0	144.9	159.1	182.0
Lamp current	0.311A	0.097A	0.04A	0.006A	0.321A	0.108A	0.040A	0.005A
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A1				EEI=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

OPERATING ON TC-DEL/TEL

	RUNNING ON 2X22W LAMP				RUNNING ON 2X40W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	<0.37A	<0.23A	<0.17A	<0.09A	<0.28A	<0.17A	<0.13A	<0.08
Power factor	≥0.99	≥0.98	≥0.96	≥0.85	≥0.99	≥0.98	≥0.96	≥0.85
Output wattage	76W±5%	38W±5%	19W±6%	8.4w±10%	56W±5%	28W±5%	14W±6%	6.4w±10%
Lamp voltage	125±10V	180±15V	200±15V	220±20V	100±10V	125±10V	150±15V	175±15V
Lamp current	300mA±5%	105mA±6%	55mA±8%	8mA±10%	300mA±5%	105mA±6%	55mA±6%	8mA±10%
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A1				EEI=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

OPERATING ON TC-DEL/TEL

	RUNNING ON 2X22W LAMP			
	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz			
Empty load power consumption	<0.8W			
Input current	<0.25A	<0.15A	<0.12A	<0.08A
Power factor	≥0.99	≥0.98	≥0.96	≥0.85
Output wattage	46W±5%	23W±5%	12W±6%	3.6w±10%
Lamp voltage	80±10V	115±10V	137±10V	150±15V
Lamp current	300mA±5%	105mA±6%	55mA±8%	8mA±10%
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5			
Preheating time	1.2S			
Humidity	30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life			
Ingress protection	IP20			
Tc	75°C			
Energy efficiency index	EEI=A1			
Warranty lifetime	42,000 h			
Insulation class	I			

OPERATING ON T8 LAMP

	RUNNING ON 2X18W LAMP				RUNNING ON 2X30W LAMP				RUNNING ON 2X36W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W				<0.8W			
Input current	0.182A	0.11A	0.076A	0.061A	0.311A	0.163A	0.109A	0.079A	0.312A	0.163A	0.117A	0.084A
Power input	38.8	21.6	12.7	9.1	68.9	34.6	21.5	14.9	68.4	34.2	23.4	15.1
Power factor	0.965	0.894	0.755	0.630	0.989	0.950	0.880	0.805	0.990	0.955	0.908	0.812
Output wattage	16.60W	6.70W	3.00W	1.8w	30.40W	12.00W	5.10W	3.2w	30.10W	12.20W	5.50W	3.8w
Lamp voltage	55.4	76.3	83.4	103.0	96.8	116.6	126.3	126.9	103.4	132.4	139.7	129.3
Lamp current	0.309	0.1	0.04	0.010	0.321	0.109	0.041	0.010	0.299	0.098	0.040	0.006
Ta. (°C)	-20-50	-20-50	-20-50	-20-50	-20-50	-20-50	-20-50	-20-50	-20-50	-20-50	-20-50	-20-50
Current crest factor	<1.5											
Preheating time	1.2S											
Humidity	30-95											
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)											
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005											
Abnormal protection	Lamp change, lamp failure, end of life											
Ingress protection	IP20											
Tc	75°C											
Energy efficiency index	EEI=A1											
Warranty lifetime	42,000 h											
Insulation class	I											

OPERATING ON T9 CIRCULAR

	RUNNING ON 2X22W LAMP				RUNNING ON 2X40W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	0.178A	0.107A	0.079A	0.069A	0.343A	0.172A	0.120A	0.088A
Power input	40.8W	22.4W	15.0W	11.8W	77.1W	37.3W	24.6W	16.4W
Power factor	0.965	0.896	0.788	0.711	0.991	0.957	0.904	0.814
Output wattage	16.60W	6.50W	3.80W	2.4w	34.00W	13.20W	6.50W	4.3w
Lamp voltage	55.8	68.3	73.1	63.5	116.0	139.7	142.9	127.3
Lamp current	0.307A	0.103A	0.056A	0.008A	0.299A	0.099A	0.040A	0.005A
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A1				EEI=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

OPERATING ON TC-LF

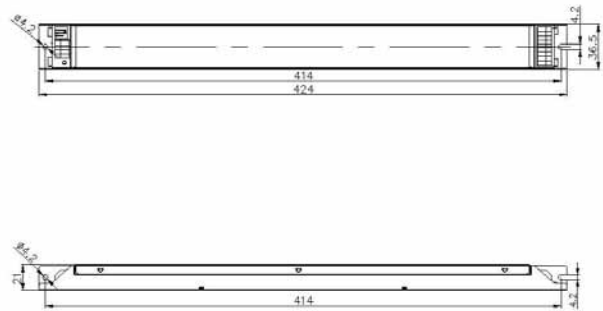
	RUNNING ON 2X22W LAMP				RUNNING ON 2X40W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	0.303A	0.17A	0.124A	0.088A	0.231A	0.142A	0.108A	0.079A
Power input	66.1	35.9	25.2	16.2	49.7	29.3	21.3	15.0
Power factor	0.989	0.958	0.92	0.829	0.98	0.938	0.891	0.798
Output wattage	29.70W	13.20W	6.40W	3.8w	21.20W	10.00W	4.90W	2.6w
Lamp voltage	100.5	141.8	162.5	159.2	70	17.3	124.9	129.2
Lamp current	0.301	0.097	0.04	0.006	0.309	0.097	0.04	0.010
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A1				EEI=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

OPERATING ON TC-L/F

	RUNNING ON 2X18W LAMP				RUNNING ON 2X40W LAMP			
	100%	50%	25%	10%	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc				220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz				50/60Hz or 0Hz			
Empty load power consumption	<0.8W				<0.8W			
Input current	0.161A	0.103A	0.075A	0.063A	0.400A	0.214A	0.142A	/
Power input	33.8W	20W	12.6W	9.4W	88.2W	46.6W	29.8W	/
Power factor	0.954	0.878	0.753	0.622	0.944	0.974	0.934	/
Output wattage	13.60W	6.20W	2.90W	6w	39.50W	17.10W	7.50W	/
Lamp voltage	44.6	69.7	81	96.7	125.2	162.0	184.1	/
Lamp current	0.315A	0.097A	0.04A	0.010A	0.317A	0.110A	0.041A	/
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5				<1.5			
Preheating time	1.2S				1.2S			
Humidity	30-95				30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)				EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005				EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005			
Abnormal protection	Lamp change, lamp failure, end of life				Lamp change, lamp failure, end of life			
Ingress protection	IP20				IP20			
Tc	75°C				75°C			
Energy efficiency index	EEI=A1				EEI=A1			
Warranty lifetime	42,000 h				42,000 h			
Insulation class	I				I			

NOTE: the min. Dimming level for TC-L/F 40w is 25%. The ballast might shutdown for protection on the load of 10%. However we can also make some adjustment to fit for 10% upon notification advance.

DIMMABLE T5 BALLAST
MODEL: HB0254-1
2X54W



The target dimmed light output level and power consumption can be pre-set by choosing the target combination of the encoded programmed switch.

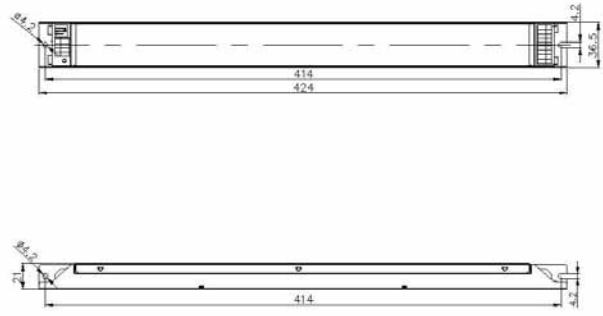
	1	2	3	% of full power
I	○	○	○	100%
II	●	○	○	50%
III	●	●	○	25%
IV	●	●	●	10%

○=ON ●=OFF



RUNNING ON 2X54W LAMP				
	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz			
Empty load power consumption	<0.8W			
Input current	<530mA	<300mA	<210mA	<140mA
Power factor	≥0.98	≥0.95	≥0.90	≥0.85
Output wattage	106W±5%	52W±5%	26W±6%	10.5W±10%
Lamp voltage	120±10V	165±15V	200±15V	230±20V
Lamp current	440mA±5%	162mA±10%	58mA±15%	25mA±20%
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5			
Preheating time	1.2S			
Humidity	30-95			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 (GB19510.4-2005 GB19510.1-2004)			
Abnormal protection	Lamp change, lamp failure, end of life			
Ingress protection	IP20			
Tc	70°C			
Energy efficiency index	EEI=A1			
Warranty lifetime	42,000 h			
Insulation class	I			

DIMMABLE T5 BALLAST
MODEL: HB0280-1
2X80W



The target dimmed light output level and power consumption can be pre-set by choosing the target combination of the encoded programmed switch.

	1	2	3	% of full power
I	○	○	○	100%
II	●	○	○	50%
III	●	●	○	25%
IV	●	●	●	10%

○=ON ●=OFF



RUNNING ON 2X80W LAMP				
	100%	50%	25%	10%
Input voltage	220Vac-240Vac or 170Vdc-270Vdc			
Frequency	50/60Hz or 0Hz			
Empty load power consumption	<0.8W			
Input current	<8000mA	<460mA	<290mA	<185mA
Power factor	≥0.98	≥0.96	≥0.92	≥0.85
Output wattage	152W±10%	76W±10%	38W±10%	16W±25%
Lamp voltage	152±10%	200±10%	250±15%	290±15%
Lamp current	545mA±4%	210mA±8%	80mA±15%	28mA±20%
Ta.	-20-50°C	-20-50°C	-20-50°C	-20-50°C
Current crest factor	<1.5			
Preheating time	1.2S			
Humidity	30-90			
EMC directive	EN55015(Version:2007) EN61547 (GB17625.1-2007)			
Safety directive	EN61347-1:2008 EN61347-2-3 (GB19510.4-2005 GB19510.1-2004)			
Abnormal protection	Lamp change, lamp failure, end of life			
Ingress protection	IP20			
Tc	75°C			
Energy efficiency index	EEL=A1			
Warranty lifetime	42,000 h			
Insulation class	I			

1-10V dimmable fluorescent ballasts

HYTRONIK has developed a big range of 1-10v analogue dimming ballast who has covered many types of lamps in various wattages.

Some of the ballast has aluminum profile filled with silicon rubber for heavy duty task, hostile thermal conditions and tough climate.

For details on HB0135A, HB0235-A and HB0249A, please contact your sales representative.

AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	PACK/ UNITS (pcs)
750122	1-10V dimmable fluorescent ballast	HB0135-A	T5 1X14/21/28/35W	42 000	40
750222	1-10V dimmable fluorescent ballast	HB0235-A	T5 2X14/21/28/35W	42 000	20
754222	1-10V dimmable fluorescent ballast	HB0249-A	T5 2X49W	42 000	20
757222	1-10V dimmable fluorescent ballast	HB0258-A	T8 2X58W	42 000	20
756222	1-10V dimmable fluorescent ballast	HB0258-A /554	T5 2X54 W	42 000	20
756622	1-10V dimmable fluorescent ballast	HB0258-A /L55	TCL 2X55W	42 000	20
755222	1-10V dimmable fluorescent ballast	HB0236-A	T8 2X36W	42 000	20
751222	1-10V dimmable fluorescent ballast	HB0236-A /818	T8 2X18W	42 000	20
753222	1-10V dimmable fluorescent ballast	HB0236-A /830	T8 2X30W	42 000	20
759122	1-10V dimmable fluorescent ballast	HB0142-A	T8 1X18/30/36 W, T5 1X24/39W, TCD-E, TCT-E, TCL-E 1X18/24/36W, T2D 1X28W, T5 Circular 1X22/40W	42 000	60
754142	1-10V dimmable fluorescent ballast	HB0142-A /L40	TCL 1X40W	42 000	60
753107	1-10V dimmable fluorescent ballast	HB0142-A /DD38	T2D 1X38W	42 000	60
759222	1-10V dimmable fluorescent ballast	HB0242-A	T8 2X18/30/36 W, T5 2X24/39W, TCD-E, TCT-E, TCL-E 2X18/24/36W, T2D 2X28W, T5 Circular 2X22/40W	42 000	50
754242	1-10V dimmable fluorescent ballast	HB0242-A /L40	TCL 2X40W	42 000	50
753207	1-10V dimmable fluorescent ballast	HB0242-A /DD38	T2D 2X38W	42 000	50

1-10V DIMMABLE T8/T5 BALLAST
 MODEL: HB0258-A
 2X58W, 2X54W, 2X55W (TCL)



Aluminum profile filled with silicon rubber for heavy duty task, hostile thermal conditions and tough climate.

RUNNING ON 2X58 LAMP		
	10V	1V
Input voltage	220Vac-240Vac	
Frequency	50/60Hz	
Empty load power consumption	<0.8W	
Input current	<550mA	<110mA
Power factor	≥0.98	≥0.7
Output wattage	106W±10%	2.2W±40%
Lamp voltage	111v±10%	290±15%
Lamp current	555mA±4%	9mA±40%
Current crest factor	<1.5	<10
Ta.	-25~+60°C	
Preheating time	1.2S	
Humidity	30-90	
EMC directive	EN55015 (version:2007) EN61547 (GB17625.1-2007)	
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005	
Abnormal protection	Lamp change, lamp failure, end of life	
Ingress protection	IP20	
Tc	75°C	
Energy efficiency index	EEL=A1	
Warranty life time	42,000 h	
Insulation class	I	

1-10V DIMMABLE T8 BALLAST
 MODEL: HB0236-A
 2X18/30/36W



Aluminum profile filled with silicon rubber for heavy duty task, hostile thermal conditions and tough climate.

RUNNING ON 2X18 LAMP		
	10V	1V
Input voltage	220Vac-240Vac	
Frequency	50/60Hz	
Empty load power consumption	<0.8W	
Input current	<199mA	<92mA
Power factor	≥0.90	≥0.9
Output wattage	42W±10%	3.0W±40%
Lamp voltage	50v±10%	100±15%
Lamp current	338mA±4%	28mA±40%
Current crest factor	<1.5	<1.5
Ta.	-25~+60°C	
Preheating time	1.2S	
Humidity	30-90	
EMC directive	EN55015 (version:2007) EN61547 (GB17625.1-2007)	
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005	
Abnormal protection	Lamp change, lamp failure, end of life	
Ingress protection	IP20	
Tc	75°C	
Energy efficiency index	EEL=A1	
Warranty life time	42,000 h	
Insulation class	I	

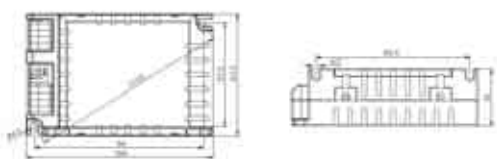
RUNNING ON 2X30 LAMP		
	10V	1V
Input voltage	220Vac-240Vac	
Frequency	50/60Hz	
Empty load power consumption	<0.8W	
Input current	<300mA	<110mA
Power factor	≥0.97	≥0.7
Output wattage	67W±10%	4.0W±40%
Lamp voltage	88±10%	129±15%
Lamp current	335mA±4%	29mA±40%
Current crest factor	<1.5	<1.5
Ta.	-25~+60°C	
Preheating time	1.2S	
Humidity	30-90	
EMC directive	EN55015 (version:2007) EN61547 (GB17625.1-2007)	
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005	
Abnormal protection	Lamp change, lamp failure, end of life	
Ingress protection	IP20	
Tc	75°C	
Energy efficiency index	EEI=A1	
Warranty life time	42,000 h	
Insulation class	I	

RUNNING ON 2X36 LAMP		
	10V	1V
Input voltage	220Vac-240Vac	
Frequency	50/60Hz	
Empty load power consumption	<0.8W	
Input current	<350mA	<100mA
Power factor	≥0.98	≥0.7
Output wattage	70W±10%	2.0W±40%
Lamp voltage	102v±10%	290±15%
Lamp current	320mA±4%	8mA±40%
Current crest factor	<1.5	<1.5
Ta.	-25~+60°C	
Preheating time	1.2S	
Humidity	30-90	
EMC directive	EN55015 (version:2007) EN61547 (GB17625.1-2007)	
Safety directive	EN61347-1:2008 EN61347-2-3 GB19510.1-2004 GB19510.4-2005	
Abnormal protection	Lamp change, lamp failure, end of life	
Ingress protection	IP20	
Tc	75°C	
Energy efficiency index	EEI=A1	
Warranty life time	42,000 h	
Insulation class	I	

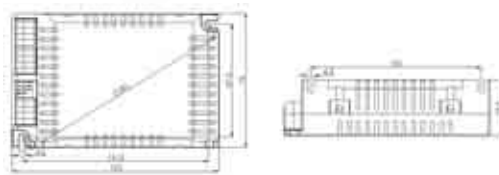
1-10V DIMMABLE TC BALLAST
 MODEL: HB0142-A, HB0242-A



Model: HB0142-A



Model: HB0242-A



The lamps in below table have similar operation current, which makes it possible to be covered by the same ballast.

MODEL NO.	LAMP TYPE	WATTAGE	NO. OF LAMPS
HB0142-A	T5	24/39	1x
HB0242-A		24/39	2x
HB0142-A	T8	18/30/36	1x
HB0242-A		18/30/36	2x
HB0142-A	T5C	22/40	1x
HB0242-1		22/40, 22+40	2x
HB0142-A	T9C	22/40	1x
HB0242-A		22/40, 22+40	2x
HB0142-A	TC-DD	28/38	1x
HB0242-A		28/38	2x
HB0142-A	TC-DEL	26	1x
HB0242-A		26	2x
HB0142-A	TC-TEL	26/32/42	1x
HB0242-A		26/32/42	2x
HB0142-A	TC-L	18/24/36/40	1x
HB0242-A		18/24/36/40	2x
HB0142-A	TC-F	18/24/36/40	1x
HB0242-A		18/24/36/40	2x

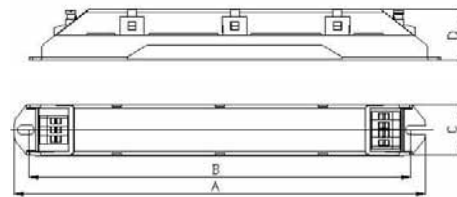
Standard ballasts for T5 lamps

NON-DIMMABLE



AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	PACK/ UNITS (pcs)
751152	Standard T5 ballast	HB0121	1x14/21w	58 000	140
753152	Standard T5 ballast	HB0135	1x28/35w	58 000	90
758252	Standard T5 ballast	HB0235	2x14/21/28/35W	58 000	50

MODEL	A	B	C	D
HB0121	180mm	167mm	21.5mm	22mm
HB0135	244.5mm	233mm	25.5mm	21.5mm
HB0235	330mm	317mm	31.5mm	27mm



WATTAGE (W)	TYPE	MODEL	MAINS INPUT	MAINS CURRENT AT UN=220 VDC	MAINS CURRENT AT UN=240 VDC	THD AT 230 V / 50 HZ	U-OUT	SAFETY CLASS
1x14W	T5	HB0121	170V-270V	77mA	72mA	<12%	250V	1
1x21W	T5	HB0121	170V-270V	110mA	100mA	<10%	250V	1
1x28W	T5	HB0135	170V-270V	144mA	132mA	<10%	330V	1
1x35W	T5	HB0135	170V-270V	175mA	161mA	<10%	330V	1
2x14W	T5	HB0235	170V-270V	148mA	136mA	<10%	330V	1
2x21W	T5	HB0235	170V-270V	215mA	198mA	<10%	330V	1
2x28W	T5	HB0235	170V-270V	289mA	263mA	<10%	330V	1
2x35W	T5	HB0235	170V-270V	351mA	322mA	<10%	330V	1

WATTAGE (W)	MODEL	LAMP POWER (W)	CIRCUIT POWER (W)	CURRENT AT 50HZ		λ AT 50 HZ		TC POINT (°C)
				220VA	240VA	220VA	240VA	
1x14W	HB0121	13.7	16.5	0.08	0.07	0.60	0.60	75
1x21W	HB0121	20.7	24.0	0.11	0.10	0.60	0.60	75
1x28W	HB0135	27.8	31.5	0.15	0.14	0.99	0.97	75
1x35W	HB0135	34.7	39.0	0.18	0.17	0.99	0.97	75
2x14W	HB0235	27.4	31.5	0.15	0.14	0.99	0.97	75
2x21W	HB0235	41.4	46.0	0.21	0.20	0.99	0.97	75
2x28W	HB0235	55.6	62.0	0.29	0.27	0.98	0.96	75
2x35W	HB0235	69.4	77.0	0.36	0.33	0.98	0.96	75

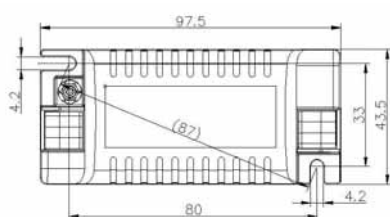
PRODUCT HIGHLIGHTS:

- Defined lamp warm start 1.2 s
- Constant light output independent of fluctuations in mains voltage
- Average service life = 50,000 h
- AC voltage range 170-270 V
- DC voltage range 180-280 V
- Power factor > 0.95 (except for HB0121)
- Operating frequency ≥42 kHz
- Safe switch off of defective lamps
- Wide operating temperature range from -20°C to + 50°C
- Suitable for use in emergency lighting installations i in accordance with VDE 0108
- Automatic re-start after lamp change
- For luminaries with or and in acc. with EN 60598/VDE 0710 and 0711
- Suitable for luminaries with safety class I and class II
- Ingress protection IP 20
- Thermal protection according to EN 61347-2-3 C5e

Standard HID ballast

AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	PACK/ UNITS (pcs)
750282	Standard HID ballast	HM1020	20W	50 000	60
750382	Standard HID ballast	HM1035	35W	50 000	40
750782	Standard HID ballast	HM1070	70W	50 000	40

20W
MODEL: HM1020



PRODUCT HIGHLIGHTS:

- Potted with silicon rubber for heavy duty task, hostile thermal conditions and tough climate.
- Steady lamp performance by mains fluctuation and lamp tolerance.
- Constant lamp power output and stable lamp colour temperature.
- Abnormal protection against empty load, overheat, lamp end of life, lamp operation voltage too high or too low, restart on removing of obstacles and power reset.
- Suitable for CDM, CMH and HCI.
- Pulse interval ignition.
- Over 90% lumen factor during the lamp life
- Comprehensive energy saving by 35%
- High power factor; EEl=A1.
- Warranty life time 50,000 hours at Tc max.

FAILURE & ABNORMAL DIAGNOSE INDICATION

The MCU is programmed with diagnosis on failure and abnormal operation. The MCU monitors the fixture and can send error signals to a LED on the ballast. The signal is carried through an optical fiber to a Lens on the enclosure of the fixture. The signal is displayed as a number of red flashes which indicates different errors.

Insert the fiber optic into the LED indication slot, then it carries the error signals to a Lens on the outside fixture.

The error signals are indicated in 10 second intervals and 1 second between each flash.



FAILURE & ABNORMAL ERROR CODES

NO. OF FLASHES	ERROR TYPE	ERROR DESCRIPTION	ACTION
o	No failure	Starting lamp	No action
o-o	Over-heat	Ballast gets too hot	Analyze reason
o-o-o	Lamp failure	Ignition timed out	Change lamp or check connection
o-o-o-o	Lamp failure	Lamp end of life	Change lamp
o-o-o-o-o	Lamp failure	Lamp voltage is too low	Change lamp
o-o-o-o-o-o	Lamp failure	Lamp voltage is too high	Change lamp
o-o-o-o-o-o-o	Ballast failure	Ballast shut down for protection	Change ballast

TECHNICAL PARAMETERS

MODEL: HM1020

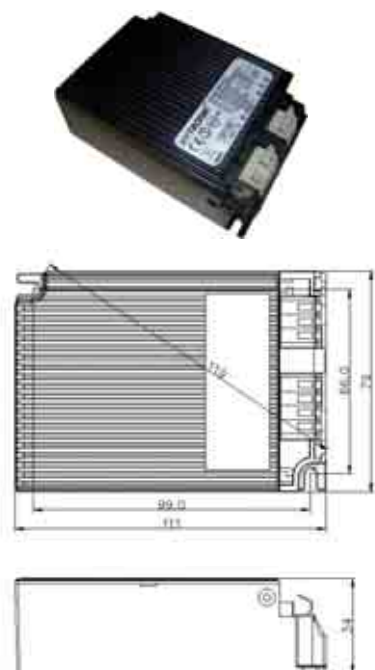
Input voltage	220-240 VAC
Input current	0.11A
Lamp power	22W (max)
Supply frequency	50/60Hz
Power factor	>0.95
Lamp output frequency	230Hz

Ta	-40~+50°C
Tc	85°C
Ignition voltage	1.5 Kv.
Output wire length	3M (max)
Dimension (LxWxH)	97.5x43.5x31mm
U-OUT	300V

STANDARD HID BALLAST

35W, 70W

MODEL: HM1035 (35W), HM1070 (70W)



PRODUCT HIGHLIGHTS:

- Steady lamp performance by mains fluctuation and lamp tolerance.
- Constant lamp power output and stable lamp colour temperature.
- Abnormal protection against empty load, overheat, lamp end of life. Restart on removing of obstacles and power reset.
- Suitable for CDM, CMH and HCl.
- Pulse interval ignition.
- Over 90% lumen factor during the lamp life.
- Comprehensive energy saving by 35%
- High power factor; EEI=A1.
- Warranty life time 50,000 hours at Tc max.

Die-casted aluminum casing Potted with silicon rubber for heavy duty task, hostile thermal conditions and tough climate.

TECHNICAL PARAMETERS

MODEL: HM1035

Input voltage	220-240 VAC
Mains current	0.18A Max.
Supply frequency	50/60Hz
Power factor	0.95
Operation frequency	120Hz
Ta	-20~+50°C
Tc	Max 75°C
Ignition voltage	Max. 4 Kv.
Lamp power	37W (max)
Degree of protection	IP20
U-OUT	250V

TECHNICAL PARAMETERS

MODEL: HM1070

Input voltage	220-240 VAC
Supply frequency	50/60Hz
Power factor	0.98
Operation frequency	120Hz
Ta	-20~+50°C
Tc	Max 80°C
Ignition voltage	Max. 4 Kv.
Lamp power	73W (max)
Degree of protection	IP20
U-OUT	250V

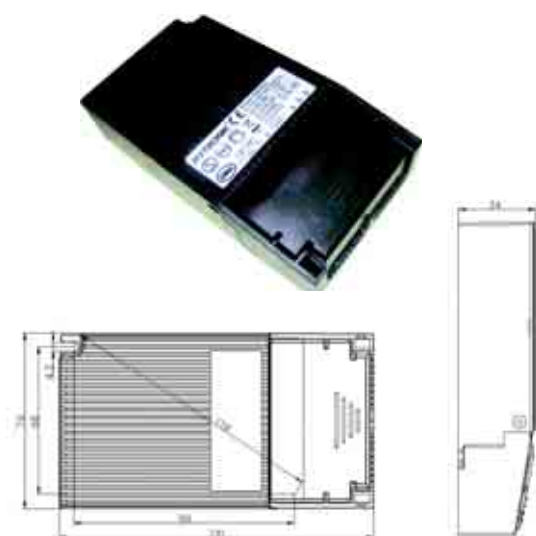
Approvals and standards: This ballast is tested and approved according to EN61347-2-12, EN61347-1, EN55015(version:2007), EN61547, EN61000-3-2, EN61000-3-3.

HID ballast for independent installation

AURA ART. NO.	TYPE	MODEL	DESCRIPTION	WARRANTY LIFETIME HOURS (TC 70)	PACK/ UNITS (pcs)
750389	Standard HID ballast	HM2035	35W independent	50 000	30
750789	Standard HID ballast	HM2070	70W independent	50 000	30

35W, 70W

MODEL: HM2035 (35W), HM2070 (70W)



PRODUCT HIGHLIGHTS:

- Steady lamp performance by mains fluctuation and lamp tolerance.
- Constant lamp power output and stable lamp colour temperature.
- Abnormal protection against empty load, overheat, lamp end of life. Restart on removing of obstacles and power reset.
- Suitable for CDM, CMH and HCl.
- Pulse interval ignition.
- Over 90% lumen factor during the lamp life.
- Comprehensive energy saving by 35%
- High power factor; EEI=A1.
- Warranty life time 50,000 hours at Tc max.

Tool-free strain relief, input cable cross section: 0.5–2.5mm, Output cable cross section: 0.5-2.5mm

Ballast can be supplied with cable assembled:

- Input cable: 2,5m H05VV-F3G1.5mm with euro plug
- Output cable: 0.5m H05vv-F 3g1.5 mm with wieland GT 18 connector

TECHNICAL PARAMETERS

MODEL: HM2035

Input voltage	220-240 VAC
Mains current	0.18A Max.
Supply frequency	50/60Hz
Power factor	0.95
Operation frequency	120Hz
Ta	-20~+50°C
Tc	Max 75°C
Ignition voltage	Max. 4 Kv.
Lamp power	37W (max)
Degree of protection	IP20
U-OUT	250V

TECHNICAL PARAMETERS

MODEL: HM2070

Input voltage	220-240 VAC
Mains current	0.4A Max.
Supply frequency	50/60Hz
Power factor	0.98
Operation frequency	120Hz
Ta	-20~+50°C
Tc	Max 80°C
Ignition voltage	Max. 4 Kv.
Lamp power	73W (max)
Degree of protection	IP20
U-OUT	250V

Approvals and standards: This ballast is tested and approved according to EN61347-2-12, EN61347-1, EN55015(version:2007), EN61547, EN61000-3-2, EN61000-3-3.

Aura Light International group companies

Aura Light International AB

Headoffice - post address
 Box 508
 371 23 Karlskrona
 Sweden
 Tel: +46 (0)455 785 00
 Fax: +46 (0)455 267 17
 E-mail: info@auralight.com
www.auralight.com

Head Office - visit address
 Vretenvägen 2
 171 54 Solna
 Sweden
 Tel: +46 (0)8 564 88 140
 Fax: +46 (0)8 564 88 345
 E-mail: info@auralight.com
www.auralight.com

Sweden
 Aura Light AB
 Tel: +46 (0) 455 785 00
 Fax: +46 (0) 455 130 34
 E-mail: info@auralight.se
www.auralight.se

Denmark

Aura Light ApS
 Tel: +45 (0)27218309
 Fax: +46 (0)455 130 34
 E-mail: info@auralight.dk
www.auralight.dk

Finland

Aura Light OY
 Tel: +358 (09)855 3640
 Fax: +358 (09)855 36410
 E-mail: myynti@auralight.fi
www.auralight.fi

Norway

Aura Light A/S
 Tel: +47 (0)22883900
 Fax: +47 (0)22883910
 E-mail: aura@aura.no
www.auralight.no

France

Aura Light France
 Tel: + 33 (0)4 91 52 14 30
 Fax: + 33 (0)4 91 52 16 40
 E-mail: info@aura.fr
www.auralight.fr

Spain

Aura Light Spain, S.L.
 Tel: +34 (0)93 272 69 49
 E-mail: info@auralight.es
www.auralight.es

Italy

Aura Italy S.r.l
 Tel: +39 (0)51 94 81 50
 Fax: +39 (0)51 94 16 31
 E-mail: info@auralight.it
www.auralight.it

Germany

Aura Light GmbH
 Tel: +49 (0)40 75 66 34-0
 Fax: +49 (0)40 75 66 34 29
 E-mail: info@auralight.de
www.auralight.de

Netherlands

Aura Light B.V
 Tel: +31 (0)33 450 40 20
 Fax: +31 (0)33 456 32 93
 E-mail: info@auralight.nl
www.auralight.nl

UK

Aura Long Life Lamps Ltd.
 Tel: +44 (0)1952 200181
 Fax: +44 (0)1952 209898
 E-mail: info@aura-light.co.uk
www.auralight.co.uk

Did you know that...

- ... lighting represents 20 percent of the total worldwide energy consumption?
- ... every year 12 billion lamps are replaced worldwide for no reason?
- ... 90 percent of the environmental impact from lighting originates in its energy consumption?
- ... EU have a mission to reduce the energy consumption by 1116 TWh before 2020?



Aura Light International market and sell a wide range of products through our sales companies and distributors on the European markets. Our production plant is situated in Karlskrona, Sweden.

Aura Light International AB
Box 508
371 23 Karlskrona
Sweden

Tel +46 (0)455 785 00
Fax +46 (0)455 267 17
E-mail info@auralight.com
Internet www.auralight.com

