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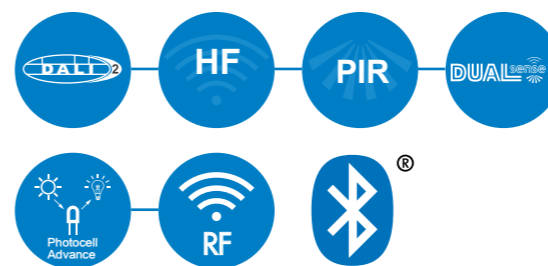
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HYTRONIK®

SENSORS & LIGHTING CONTROL

OEM PRODUCT GUIDE 2017-2018



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HYTRONIK INDUSTRIAL LIMITED

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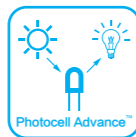
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INTRODUCING: Hytronik Motion Sensors

Hytronik is the market leader for microwave motion sensor technology in the professional lighting industry. We deliver high quality controls to the high end professional lighting manufacturers throughout the world. With our strong R&D competence, innovative design and rigid quality control, we have earned an excellent reputation in the UK, Scandinavia and southern Europe. Hytronik holds worldwide patents on the design of HF flat antennas for use in motion detection sensors, as well as patents on innovative methods for daylight controls. Thanks to antenna expertise and sophisticated software programming, Hytronik sensors are tunable to set detection range / full-power hold-time / dimming level after hold-time /stand-by time for dimmed level and photocell tuning for the real application. Standardising on DALI or 1-10V dimming, our output control signals deliver the choices of: on/off control, bi-level dimming or tri-level control , tunable white, circadian rhythm and daylight harvesting.

1 Advanced Product Features



Photocell Advance

Hytronik are now offering an outstanding improvement to our integrated photocell; A true photocell feature which works from BEHIND the luminaire cover to distinguish between natural daylight and artificial light. The custom-made photocell is offered in 3 ways in selected products across our range:

- 1) Daylight Harvesting
- 2) Dusk / Dawn Sensor (automatic on/off)
- 3) Daylight priority control over the occupancy sensor



24-hour Daylight Monitoring

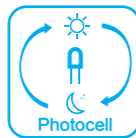
Similar in operation to a dawn/dusk sensor operating from behind the cover, Hytronik's innovative software design provides this function for further energy-savings and smart integration possibilities for luminaire manufacturers. This function is available on featured products when the stand-by period is set to "+∞".



Daylight Harvest (Daylight Regulating)

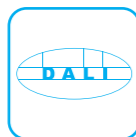
Right time, right place and the right amount of light!! Daylight harvest (also known as daylight regulating) is a must in the future lighting norms.

The daylight sensor measures the available surrounding natural light and calculates how much artificial light is needed to reach the target lux level. The control output is passed to the drivers by DALI or 1-10V signals which then deliver the needed amount of light.



Photocell (Dawn / Dusk Light Sensor)

Using our Photocell Advance technology in which daylight measurements can be taken from the behind the diffuser, we can now offer dawn/dusk photocell functionality without the need to compromise the integrity of the luminaire body. Provides simple automatic off/on operation, dependant upon settable daylight condition.



Latest DALI Protocol for Sensor Control

Being a member of the DALI group, Hytronik remain compliant with the latest DALI standards for sensor controls. We offer both DALI sensors for DALI systems as well as independent DALI sensors (containing DALI power supply) suited to small and medium projects for DALI 'Plug N' Play' installation.



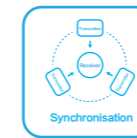
One-key Commissioning

Fast and simple commissioning is possible by using Hytronik programmable remote controller HRC-11. The settings are programmed once and are then saved on the remote controller as a custom scene. With just one press, the programmed scene can be applied to other sensors.



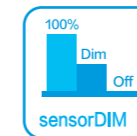
Ambient Daylight Threshold

Available on models which use the remote control. This feature enables the daylight sensor to be commissioned to the environment in which it is installed. The DIP switch setting offer a fixed approximation for installation, However if the user 'feels' that the light should be on, pressing this button on the remote control will put on the light and store the new daylight setting. Either the remote control handset or the DIP switch settings can overwrite each other. The last setting made from either will be stored.



Synchronisation Control Function

In many cases, several sensors are connected together to control the same fixture. This requirement places extra demand on the reliability and noise handling capability of such sensors. Hytronik offer this feature with specially designed hardware & software to ignore such interferences and ensure stable operation.



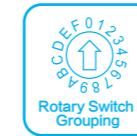
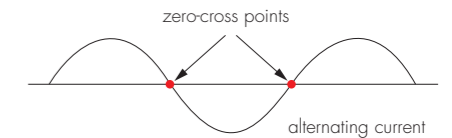
Tri-level Control Function

Tri-level control (corridor function) is achieved by not only building the dimming profile into the driver, but also combining the sensor within the product, therefore reducing space requirements and costs. SensorDim can be considered the whole package for tri-level control.



Zero-cross Relay Operation

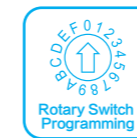
Our intelligent software design means our sensors switch the load right at the zero-cross point to minimise inrush current passing through the relay contact point. This enables the maximum load and lifetime of the relay to be achieved.



Rotary Switch Grouping

Fast and simple commissioning of wireless sensors is possible by using Hytronik products with this feature. Just set the rotary switch numbers to the same position on all members (both transmitter and receiver) in the group and its job done!

On system DALI models, this switch is used to assign the product to the required DALI channel.



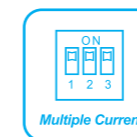
Rotary Switch Built-in Programming

Quick installation is made possible by a 'click' to choose one of the 16 built-in programs on the rotary switch. Each parameter of detection range, motion hold-time, daylight threshold, stand-by period, stand-by dimming level is instantly set. Customisation of each individual parameter remains available for flexibility.



Further 20% Saving @ Initial 10,000 Hours

It is common in LED luminaire lumen output specification to rate the performance after 10,000 hours, which means an installation may be over-lit by as much 20% during the first 10,000 hours. In some cases of a retrofit of fluorescent to LED, the occupants may also complain of discomfort from the new lit environment. This 20% @ 10,000 hrs wasted energy and any discomfort can now be controlled by the press of a button using Hytronik controls. 100% output is simply restored via the remote control.



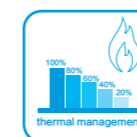
Multiple Current

Multiple current selections cut down the inventory size and cost of stocking LED drivers. Most Hytronik drivers offer a DIP switch for the customer to select the suitable current for different luminaire requirements.



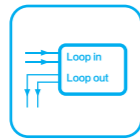
Over-heat Protection

A thermal switch is built-in to prevent key components from overheating. The driver enters self-shutdown mode when the internal temperature reaches the threshold and automatically resumes normal operation when the over-heat condition is reduced or removed.



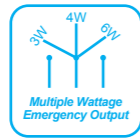
Intelligent Thermal Management

If the LED driver is subject to overloading or overheating, instead of shutting down this smart driver technology reduces the power output in 20% stages until the thermal condition is at a safe level for the driver to work in a stable condition. As the driver cools, the light output goes back to 100%.



Loop-in and Loop-out Terminal

Whether you are saving component cost and assembly work on sensors designed for built-in fixtures, or looking for easy installation on stand alone sensors, Hytronik sensors are designed with the all terminals you need. With this feature, L and N terminals are provided for power in and L' and N' for power out to the load. Easy, logical and clean!



Multi-watt Emergency Output

To save inventory cost, Hytronik emergency LED drivers with this feature have 3 optional wattages to fit for different requirements; 3W, 4W, 6W. Simply then select the correct battery type from our High Temperature battery range for you your requirement of 1, 2 or 3 hours duration.



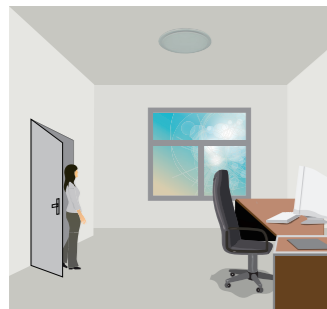
Self-testing Emergency Driver

This is the self-test feature for emergency lighting. A built-in MCU programed self-testing schedule (with various patterns of LED flashes to indicate the status and failure mode of the emergency light fitting) provides end-users with reduced mainainence costs.

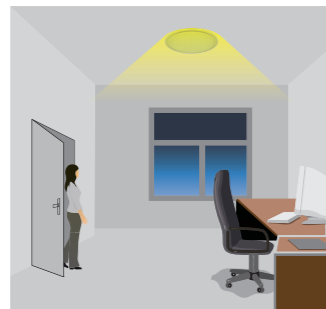
2 Explanation of Product Operation

Tri-level Control

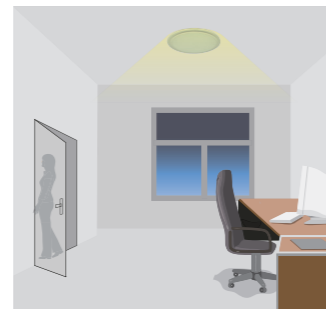
Hytronik Sensor-Dim products combine all the components required in a space saving and cost effective solution with simple comissioning. They offer 3 levels of light control: 100%->dimmed light->off, with settable time periods between each phase, as well dimming level and daylight threshold. They can also be configured so that the light always remains in the dimmed mode in absence for areas where there are safety, security or enhanced comfort requirements. Our tri-Level control sensor only options contain the control intelligence in software so that they can be used with any commercially available 1-10V or DALI lamp control gear.



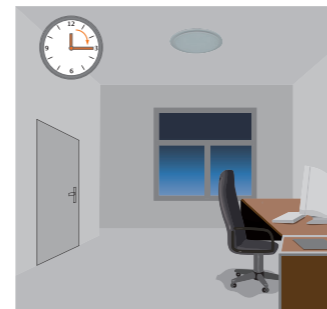
With sufficient natural light, the light does not switch on when presence detected.



With insufficient natural light, the sensor switches on the light automatically when person enters the room.



After hold-time, the light dims to stand-by level or turns off completely if surrounding natural light is above the daylight threshold.

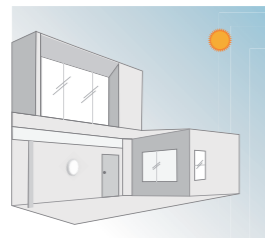


Light switches off automatically after the stand-by period elapsed.

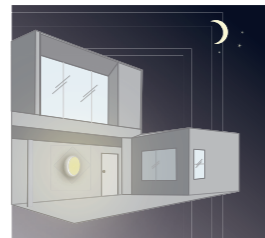
Photocell

Photocell Advance Technology!

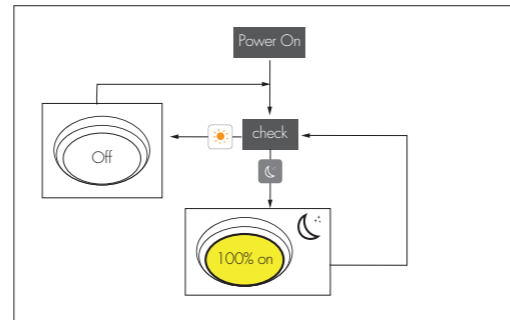
Introducing our Photocell Advance technology in which daylight measurements can be taken from the behind the diffuser, we can now offer dawn/dusk photocell functionality without the need to compromise the integrity of the luminaire body



At dawn, light turns off automatically when natural light reaches above daylight threshold.



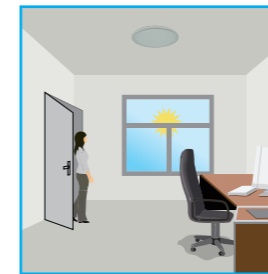
At Dusk, lights turn on automatically when natural light goes below daylight threshold.



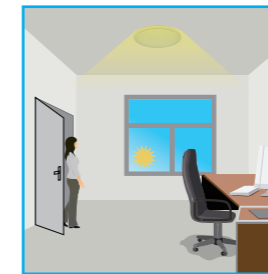
Daylight Harvest

Right time, right place and the right amount of light!! Daylight harvest (also known as daylight regulating) is a must in the future lighting norms. The daylight sensor measures the available surrounding natural light and calculates how much artificial light is needed to reach the target lux level. The control output is passed to the drivers by DALI or 1-10V signals which then deliver the needed amount of light .

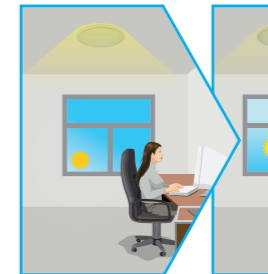
Now with Photocell Advance technology, Daylight Harvest can be performed behind the cover!!



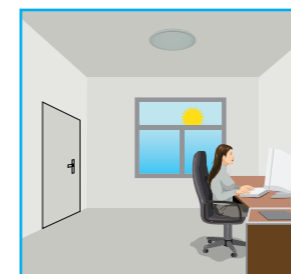
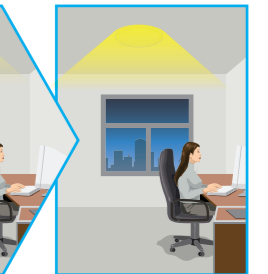
Light will not switch on when natural light is sufficient, even if there is motion detected.



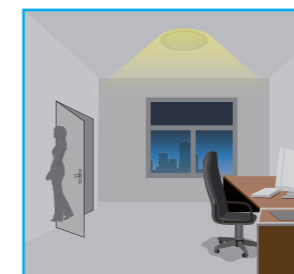
Light switches on automatically with presence and the natural light is insufficient.



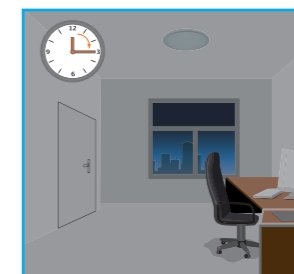
The lamp turns on at full or dims to maintain the lux level, light output regulates according to the level of natural light available.



Light will be switched off when the ambient natural light is sufficient.



Light dims to stand-by brightness after hold-time, in stand-by period, the light stays on the selected minimum level.



Light switches off automatically after the stand-by period.

Note:

Light will automatically dim down and eventually turn off if surrounding natural light lux level is above the daylight threshold, even if there is motion detected.

However, if the stand-by period is preset at "+∞", the light will never switch off but dim to minimum level, even when natural light is sufficient.

24h Daylight Monitoring

Now with Photocell Advance technology, natural daylight will override the occupancy sensor.

Automatic on/off, based upon natural daylight conditions, our innovative and patented software enables our antenna with built-in daylight sensor to provide a "smart photocell" or dawn/dusk function from behind the luminaire cover, preventing the need to drill for an external photocell. This function is activated when the stand-by period is set to "+∞".

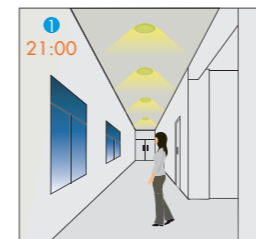
Settings on this demonstration:

Hold-time: 10min

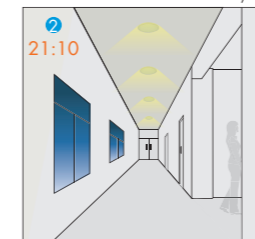
Daylight threshold: 50lux

Stand-by dimming level: 10%

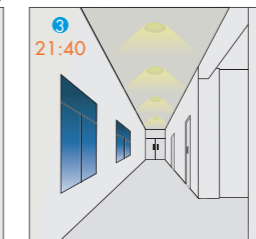
Stand-by period: +∞



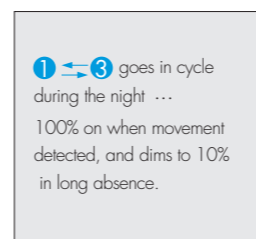
The light switches on at 100% when there is movement detected.



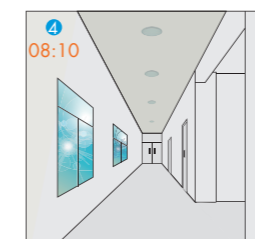
Light dims to stand-by level after the hold-time (no motion).



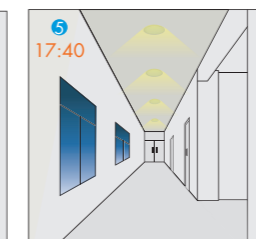
Light remains in dimming level during the night.



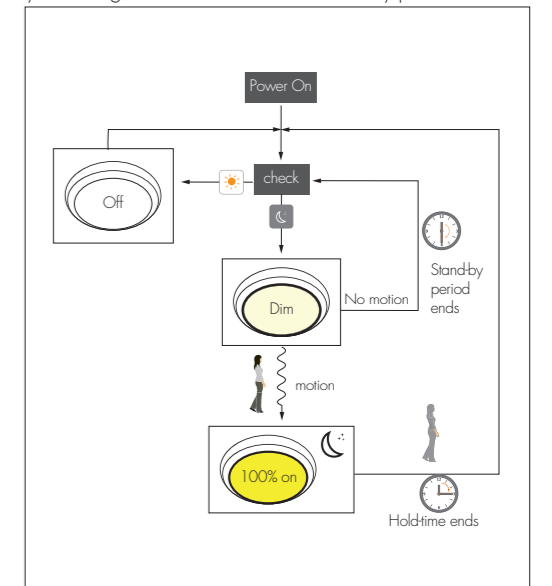
1 ↔ 3 goes in cycle during the night ... 100% on when movement detected, and dims to 10% in long absence.



At dawn, light turns off completely when natural light reaches above daylight threshold.



Light turns on 10% automatically when natural light is insufficient.

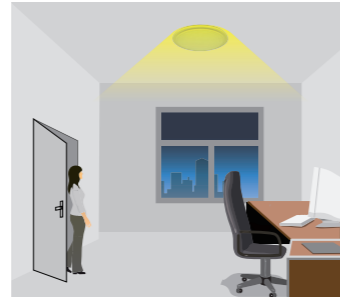


On/Off Control

These sensors provide simple switching of the light based upon occupancy. A daylight sensor is also built-in to prevent the light switching on when there is sufficient natural light. The pictures below illustrate typical operation.



With sufficient natural light, the light does not switch on when presence detected.



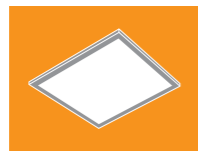
With insufficient natural light, the sensor switches on the light automatically when person enters the room.



The sensor switches off the light automatically after the hold-time when there is no motion detected.

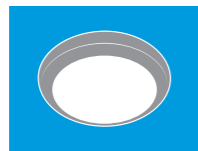
3 Typical Recommended Applications

Component selection is part of the skill and creativity of the luminaire design engineer, however the illustrations below serve as a guide to the typical applications to which the featured product may be suited and appear next to relevant products through this brochure.



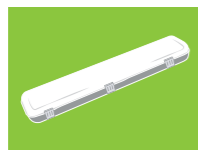
LED Panels or 'Troffers'

Recessed luminaires for false ceilings typically require control gear products with insulated terminals and cord restraint for safe installation in the ceiling void. Antenna integrations are possible, but usually require comprise with complicated assembly. Hytronik offer discrete flush mount sensors which can be neatly and easily situated next to the luminaire. Further information on our suited product ranges can be found on our website or stand-alone brochure.



Utility luminaires or bulkheads

These products usually have restricted space and/or demanding thermal requirements. There are usually also many variants to cover in a given product range whilst trying to remain within a competitive budget. Hytronik serves this customer base and many clients already benefit from our integrated control gear, occupancy sensing and daylight sensing solutions.



Linear fixtures

This style represents a wide range of luminaire styles from vapor proof/tri-rated/IP-65 style to utility low-bay batten fixtures and high end architectural suspended fixtures. In terms of control gear the requirements and demands are similar: low profile and thermally robust.



High power flood lights and high bay fixtures

These fixtures usually demand a long range sensor in a small space or a means of external mount in an IP54/65 rated package. This brochure covers sensors meant for internal mounting and IP20 'bolton' style. For sensors which are IP54/IP65 rated and suitable for externally mounting to the fixture, please refer to our website or stand-alone brochure.

4 Warranty



Hytronik products are designed and manufactured to the highest standards so that we may offer a 5-Year product warranty to cover product design and manufacturing defects. The warranty applies to component parts supplied by Hytronik and is applicable to the party to which the sale was made. The warranty is not transferable to a 3rd party and compatibility with external components are the responsibility of the finished goods manufacturer. The full warranty policy is available upon request or from our website.

Hytronik Lighting Controls Incorporating

Bluetooth® Wireless Technology

Hytronik is now presenting our approach to lighting control by adding to our antenna range Bluetooth® wireless technology. The antenna will be further enhanced by our Photocell Advance™ technology to achieve the latest in daylight control for maximum energy savings.

Based upon a mesh network, connected systems are now conveniently commissioned and controlled using the Hytronik APP available on both Android and iOS platforms. User control is also conveniently considered with the optional wall mounted scene controller.

Please check our website regularly for updates or contact our sales team and we will be happy to discuss your requirements.

Main Body

Add Bluetooth® wireless connectivity to your existing LED Driver



HC038V (1-10V output)
HCD038 (DALI output)

Direct to Hytronik Hex-Drive™ LED Driver



Hex-Drive™



With Occupancy (Master node) HBT01



- ※ Master node with Bluetooth® wireless technology
- ※ Wireless grouping
- ※ Occupancy detection
- ※ Photocell Advance daylight controls

Without Occupancy (Receiver node) HBT02



- ※ Receiver node with Bluetooth® wireless technology
- ※ Wireless grouping
- ※ Photocell Advance daylight controls



IOS



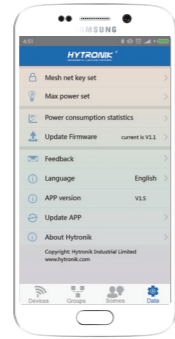
HBT03



ANDROID

Unlock the Power of Lighting Control Using Our APP!

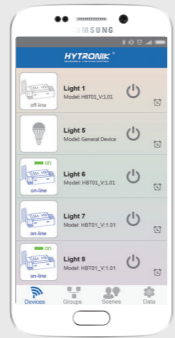
- 1) Safety first!
Set-up network
Security



Network Security

- ※ Intrinsic Bluetooth Mesh security
- ※ Unique account number required
- ※ Password protected
- ※ Further security features will be added before release

- 2) Identify devices
on the network



Network Commissioning and Monitoring

- ※ Easily identify devices connected to the mesh network
- ※ Real time status check
- ※ Enable or disable connected devices

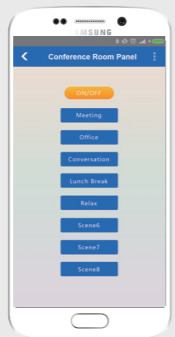
- 3) Assign groups
and set individual
scene parameters



Setup advanced functions :

- ※ Setup groups and set scenes
- ※ Realtime clock control
- ※ Corridor function with programmable fade
- ※ Circadian rhythm and tunable white control
- ※ Daylight regulating / harvesting
- ※ Occupancy sensor settings

- 4) Hand over to
the end user with
free to use controller
app



Free User App

- ※ Free to download
- ※ Available to both users of Android and iOS
- ※ Simple operation allows the user to set the lighting to their own comfort conditions

The end user may also
operate the lights with
our HBT03 wall switch



HBT03

HBT03 Bluetooth wall controller

- ※ Works as an alternative to the App.
- ※ 6 scene selections
- ※ Real time adjustment of brightness and manual on/off control.
- ※ Handy night light feature

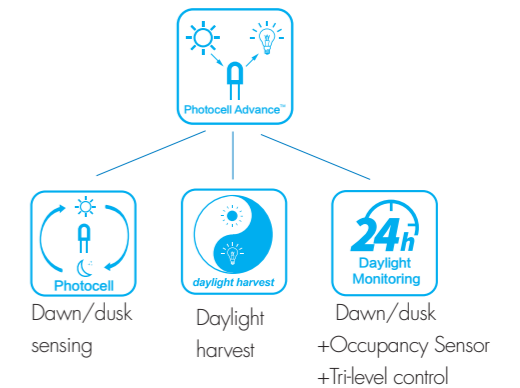
Photocell Advance™

Hytronik is proud to introduce our newly developed photocell technology into a custom designed component which brings great possibilities for luminaire designers, adding high-end functionality in space saving and aesthetically pleasing designs. Using our custom designed photocell, we can distinguish artificial LED light sources from natural daylight, even when the product is placed behind the optic or diffuser.

Integration of the technology into our product range is an on-going process and many more models will be available with this technology over the year of 2017-2018.

Please check our website regularly for updates or contact our sales team and we will be happy to discuss about your requirements.

Our custom-made Photocell Advance™ component can be used for daylight control in the following ways:



Without Occupancy Detection



Automatic On/off (dawn / dusk)

DS05

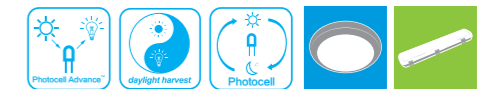
- ※ 'Hidden' Daylight sensor - Photocell Advance™ technology
- ※ Dipswitch or remote control programming
- ※ Daylight threshold learning - commission to environment
- ※ Simple automatic 'on'/'off' control - 400W maximum



1-10V Daylight Harvest

DS06

- ※ 'Hidden' Daylight sensor - Photocell Advance™ technology
- ※ Daylight Harvest version works from behind the cover
- ※ 1-10V Version, maximum load 400W @230V
- ※ Can be used for simple automatic 'on'/'off' control - fixed at 20 LUX



DALI Daylight Harvest

DS07

- ※ 'Hidden' Daylight sensor - Photocell Advance™ technology
- ※ Daylight Harvest version works from behind the cover
- ※ DALI Version, maximum load 30mA (1.5 LED drivers)
- ※ Plug n' Play DALI, no DALI controller required



Combining occupancy sensing with either Daylight Harvest or Tri-level control has always been a strength of Hytronik products for smart integrated designs.

Our New Photocell Advance™ technology now allows us to take daylight controls to a new level:

1) Daylight Harvest traditionally required 'line of sight' or isolation from the artificial light source to prevent confusion of the photocell. Our custom designed photocell and intelligent software now allows us to distinguish between the 2 different light sources and we can provide Daylight Harvesting and microwave occupancy sensing from behind the luminaire optic.

2) When Hytronik combined Tri-level control with software enhancements to use a basic photocell as a dawn/dusk style photocell, we introduced it as our popular '24hr Daylight Monitoring' function. This method required that the light was momentarily turned off during periods of absence to check the natural light condition. Photocell Advance technology has further enhanced this function by providing 'permanent' checking and eliminating the need to turn off the light.

3) Photocell Advance™ also enhances tri-level control applications as it replaces the older style photo diode which served as an 'inhibit' to the occupancy sensor, but always required the luminaire to be in an 'off' condition before the daylight could be checked. Photocell Advance™ technology allows us to give priority to the daylight sensor and will always over-ride the occupancy sensor timings when the natural light demands.

With Occupancy Detection



Tri-level Version HC019V/I

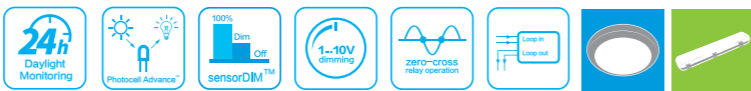
- ※ 'Hidden' Daylight sensor - Photocell Advance™ technology
- ※ Up to 10 sensors group control via synchronization
- ※ Tri-level control with automatic 'on' and automatic 'off'
- ※ Dipswitch pre-set programming
- ※ 0-10V dimming control
- ※ 12 x 6m detection range



Tri-level Version HC403VRC-KD/1 HC404VRC-KD/1

- ※ 'Hidden' Daylight sensor - Photocell Advance™ technology
- ※ Loop-in and loop-out terminal, easy wiring
- ※ Daylight Monitoring function
- ※ Zero-cross relay operation
- ※ Switched power (capacitive load) 800W@230VAC
- ※ Operating voltage 120-277VAC
- ※ One key commissioning for easy installation

HC403VRC-KD rectangular body
HC404VRC-KD linear compact body.



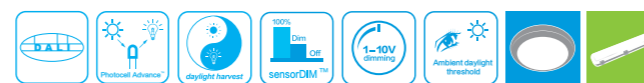
Daylight Harvest Version HC019VRC/DH

- ※ 'Hidden' Daylight sensor - Photocell Advance™ technology
- ※ 12 x 6m detection range
- ※ 0-10V dimming control
- ※ Handheld remote control programming
- ※ Fully automatic dimming control based upon target lux setting
- ※ Up to 10 sensor group control via synchronization

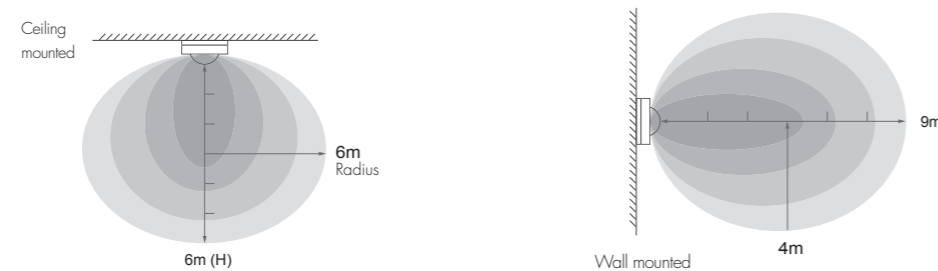


Daylight Harvest Version HCD418/DH

- ※ 'Hidden' Daylight sensor - Photocell Advance™ technology
- ※ 12 x 6m detection range
- ※ DALI power supply circuit included (Max. 20 LED drivers)
- ※ Handheld remote control programming
- ※ Fully automatic dimming control based upon target lux setting
- ※ Up to 10 sensor group control via synchronization



Detection Pattern



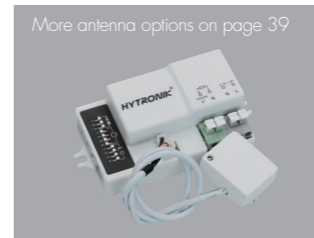
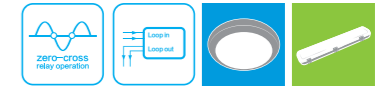
Sensors for On/Off Control

Products



Super-compact Version HC005S

- ※ Zero-cross relay operation
- ※ Loop-in and loop-out terminal, easy wiring
- ※ Maximum Load 400W capacitive 800W resistive



More antenna options on page 39

Detached Version HC009S-KD

- ※ With detached sensor antenna, shadow-free
- ※ Zero-cross relay operation
- ※ Loop-in and loop-out terminal, easy wiring
- ※ Maximum Load 800W capacitive 1400W resistive



Attachable Version HC030S

- ※ External installation, attach to outside of fixture
- ※ Zero-cross relay operation
- ※ Maximum Load 800W capacitive

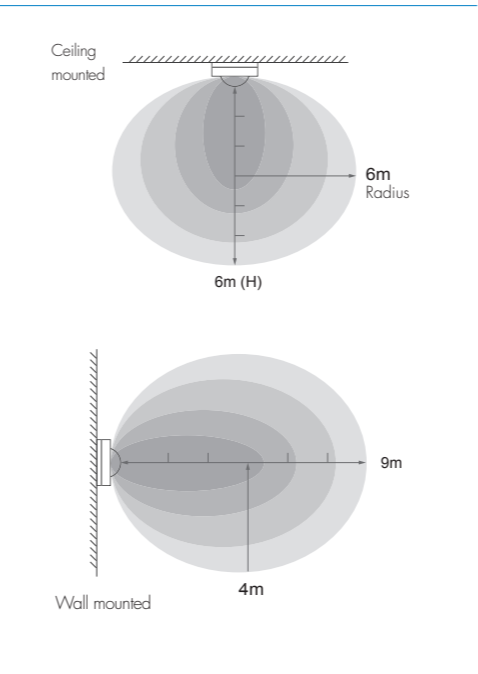


Standard Version HC009S

- ※ Synchronisation control
- ※ Zero-cross relay operation
- ※ Loop-in and loop-out terminal, easy wiring
- ※ Operating temperature -35 ~ +70 degree
- ※ Maximum Load 400W capacitive 1200W resistive



Detection Pattern



Common Technical Data*

Operating voltage	220-240VAC
Detection range	Maximum (Diameter x Height): 12m x 6m, Detection angle: 30°~150°
Mounting height	Maximum 6m
Certification	Semko, CB, EMC, CE, R&TTE, SAA

*Please refer to our website for full technical information of each product

Sensors for Tri-level Control

Products



Synchronisation Control HC019V

- ※ 2 or more sensors control the same group of receivers
- ※ Zero-cross relay operation
- ※ Manual override or absence detection function
- ※ Loopin and loop-out terminals
- ※ Maximum Load 400W capacitive 1200W resistive



Premium Version HC419VRC

- ※ Transmitter/receiver group control
- ※ Daylight Monitoring
- ※ Ambient daylight threshold
- ※ Zero-cross relay operation
- ※ Manual override or Semi-auto mode function
- ※ Switched power (capacitive load) 800W@230VAC;
- ※ Operating voltage 120-277VAC
- ※ One key commissioning for easy installation



More antenna options on page 39

Detached Version HC403VRC-KD / HC404VRC-KD

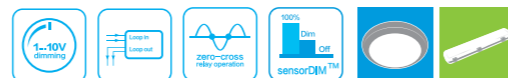
- ※ Loopin and loopout terminal, easy wiring
- ※ Ambient daylight threshold
- ※ Daylight Monitoring function
- ※ Zero-cross relay operation
- ※ Switched power (capacitive load) 800W@230VAC
- ※ Operating voltage 120-277VAC
- ※ One key commissioning for easy installation

HC403VRC-KD rectangular body
HC404VRC-KD linear compact body.

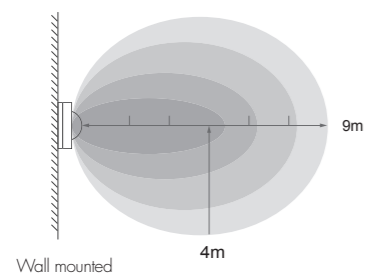
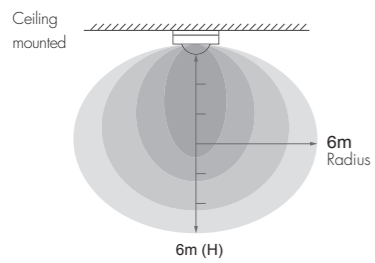


Advanced Version HC018V

- ※ Loopin and loopout terminal, easy wiring
- ※ Daylight Monitoring function
- ※ Manual override or Semi-auto mode (absence detection) function
- ※ Switched power 800W (capacitive load)



Detection Pattern

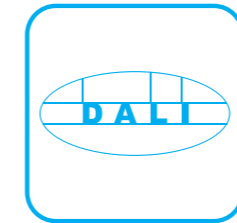
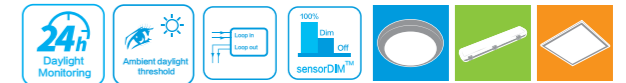


Intelligent antenna options for these models now include Bluetooth® connectivity!



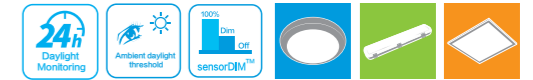
Detached Linear Sensor HIR02/SAM7+HC038V

- ※ With PIR or HF sensor head option
- ※ 1-10V output
- ※ Manual override access
- ※ Loopin and loopout terminal
- ※ Maximum Load (HC038V) 400W capacitive; 800W resistive
- ※ One key commissioning for easy installation



Detached Linear Sensor HIR02/SAM7+HCD038

- ※ With PIR or HF sensor head option
- ※ DALI power supply circuit included
- ※ Manual override access
- ※ Switched power (HCD038)
DALI output, maximum 15 devices / 30mA
- ※ One key commissioning for easy installation



Common Technical Data*

Operating voltage	220-240VAC
Detection range	Maximum (Diameter x Height): 12m x 6m. Detection angle: 30°~150°
Mounting height	Maximum 6m
Certification	Semko, CB, EMC, CE, R&TTE, SAA

*Please refer to our website for full technical information of each product

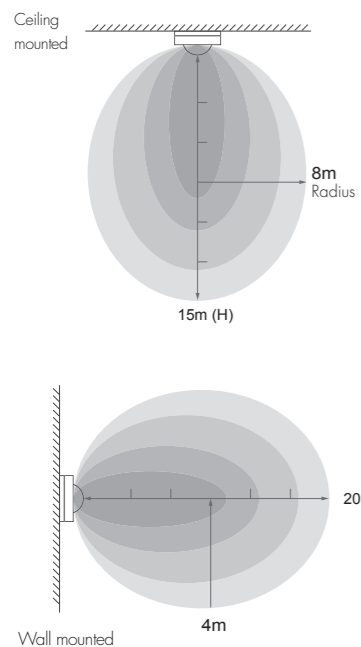
Sensors for High Bay

Reinforced version with extended detection range

These sensors are particularly suited for the applications below:

1. High bay luminaires which are usually installed at a height of typically 8-15m, such as warehouses.
2. Office light, most of which have aluminium louvres and is impossible for microwave sensors to go through.
3. Vandal-proof / heavy service fixtures with thick glass or polycarbonate covers which reduce the range of an internal sensor.

Detection Pattern



Products



Premium Version HC419VRC/R

- ※ Extended Sensor Antenna
- ※ Daylight Monitoring
- ※ Ambient daylight threshold
- ※ Zero-cross relay operation
- ※ Manual override or Semi-auto mode (absence detection) function
- ※ One key commissioning for easy installation



Detached Version HC403VRC-KD / HC404VRC-KD with SAM6 Antenna

- ※ Loop-in and loop-out terminal, easy wiring
- ※ Ambient daylight threshold
- ※ Daylight Monitoring function
- ※ Zero-cross relay operation
- ※ One key commissioning for easy installation

HC403VRC-KD rectangular body,
HC404VRC-KD linear compact body.



Standard Version HC401SRC/R

- ※ On-off control
- ※ Ambient daylight threshold
- ※ Zero-cross relay operation
- ※ Switched power (capacitive) 800W@230VAC
- ※ One key commissioning for easy installation



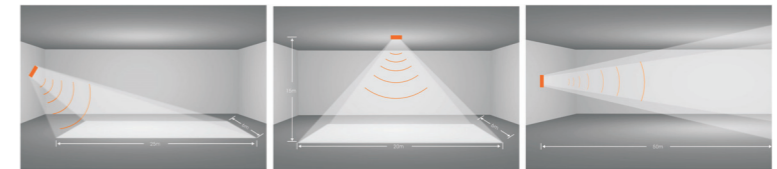
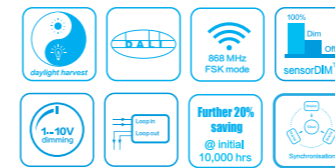
Attachable Version HC430S/R

- ※ External installation, attach to outside of fixture
- ※ On-off control



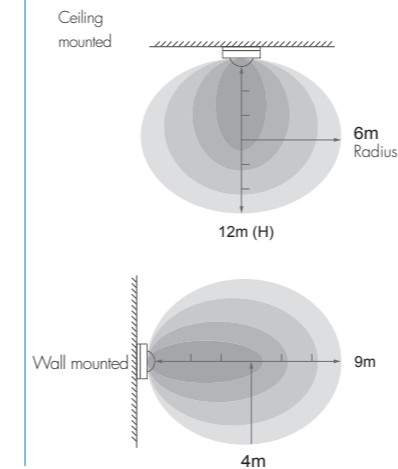
Microwave Aisle Sensor HCD450VDSRC / HCD450VRC / RF

- ※ New! Wireless communicating RF version - HC450VDSRC / RF
- ※ 40mA DALI power supply circuit included (upto 20 Drivers)
- ※ Daylight harvest (HCD450VDSRC) daylight interactive (HCD450VDSRC/RF)
- ※ Dry contact control
- ※ Loop-in and loop-out terminal
- ※ 2 channels switched power (1-10V): 2X1000W@220-277VAC
- ※ One key commissioning for easy installation
- ※ Synchronisation control



25mx6m coverage @ 8m mounting height 25mx6m coverage @ 1.5m mounting height 50m detection length @ 5m mounting height

Detection Pattern



Attachable Version to High-bay Luminaires HMW31/32/34/35/38RF/39RF



- ※ 1-10V or independent DALI control
- ※ Daylight harvest or tri-level light control function
- ※ Daylight detection prior to motion detection
- ※ 360° / maximum detection 12m (D) x 12m (H)
- ※ IP65, multi-mount enclosure
- ※ Remote control or pre-set programmable
- ※ One-key commissioning for easy installation
- ※ Wireless communication - create connected zones for progressive lighting response.

Note: The HMW3x series are HF motion sensors.
The HIM3x series are dual sense (HF + PIR) sensors.
Please refer to our website for full technical information of each product



High-bay DualSense models HIM31/32/34/35/38RF/39RF



Common Technical Data*

Operating voltage	120-277VAC
Mounting height	Maximum 15m
Certification	Semko, CB, EMC, CE, R&TTE, SAA

*Please refer to our website for full technical information of each product

DALI Sensors

DALI Functions

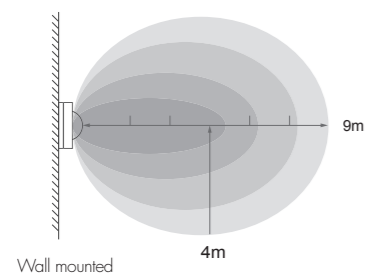
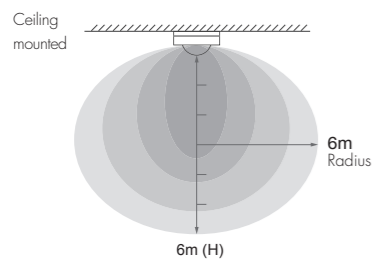
As the use of DALI as a means of lighting control grows in popularity, Hytronik offer two types of DALI Sensor to cover different requirements:

1) For commission-free 'Plug n' play' DALI, we recommend our sensors with built-in DALI power supply. These devices send commands to the default broadcast channel 0 of the connected DALI lamp control gear (see full product specification for the maximum number of connected devices). No DALI master controller or programming of the DALI drivers is necessary - our smart sensors take care of it all!

2) To add occupancy sensing to a commissioned DALI system, we offer a very simple yet powerful sensor which can be assigned to a DALI group by simply selecting the group you wish to control with the sensor via the rotary switch. These sensors require an external DALI power supply for operation.

Common to both types is the tri-level light control as employed by our other advanced sensors which, depending on model, are configurable via switch settings or remote control.

Detection Pattern



Products



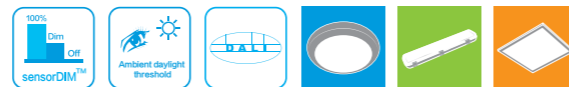
Built-in Version HCD405RC

- ※ Tri-level control
- ※ For DALI bus power supply
- ※ 16 groups selection via rotary switch
- ※ Input current Approximately 12mA
- ※ One key commissioning for easy installation



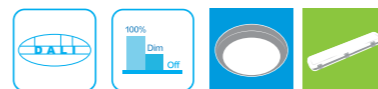
Detached Linear Sensor HIR02/SAM7+HCD038

- ※ With PIR or HF sensor head option
- ※ DALI power supply circuit included
- ※ Manual override access
- ※ Switched power (HCD038)
DALI output, maximum 15 devices / 30mA
- ※ One key commissioning for easy installation



Independent Version HCD418

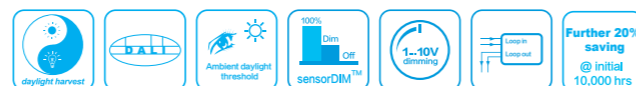
- ※ DALI power supply circuit included
- ※ Tri-level control
- ※ Manual override/Semi-auto mode(absence detection)
- ※ Operating voltage 120-277VAC



Microwave Aisle Sensor HCD450VDSRC

- ※ DALI power supply circuit included
- ※ Daylight Harvest
- ※ Dry contact control
- ※ Loopin and loopout terminal
- ※ 2 channels of load
- ※ Switched power 2X1000W@220-277VAC
- ※ Detection range 25m x 6m @ 15m mounting height

For detection pattern, please see page 16.



Common Technical Data*

Detection range	Max. (DxH): 12m x 6m
Mounting height	Max. 6m
Certification	Semko, CB, EMC, CE, R&TTE, SAA

*Please refer to our website for full technical information of each product

SensorDIM™ Integrated Sensors & LED Drivers

Hytronik's range of SensorDIM™ products are designed by electronic engineers for luminaire engineers. We understand the challenges faced for balancing space, functionality, thermal management, depth of product range, manufacturability and of course, cost. Our smart integration solutions include:

- * Multi-current LED Driver + sensor + basic photocell
- * Multi-current dimming LED driver + sensor + basic photocell
- * Multi-current dimming LED driver 1 + sensor + smart photocell (Daylight Monitoring - Automatic on/off)
- * Multi-current dimming LED driver + sensor + smart photocell + Emergency
-And more!

For higher power and linear integration options, please see our HEX-drive range in the LED drivers section of this brochure.

Common Technical Data*

Operating voltage	220-240VAC 50/60Hz
Detection range	Maximum (Diameter x Height): 8m x 5m. Detection angle:30~150 degree
Mounting height	Maximum 5m
Certification	Semko, CB, EMC, CE, R&TTE, SAA

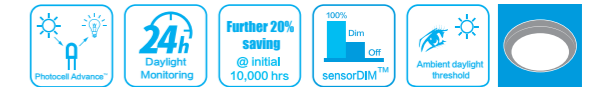
*Please refer to our website for full technical information of each product

Products



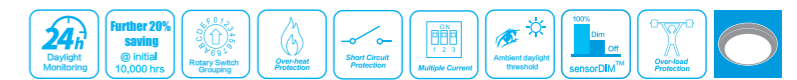
Daylight Monitoring Version HEC7030

- ※ Detached sensor antenna, shadow-free
- ※ Tri-level control
- ※ Extended Sensor Antenna
- ※ Ambient daylight threshold
- ※ 80% power output @ Initial 10,000 Hours
- ※ Manual override or Semi-auto mode (absence detection) function
- ※ Multiple current selections
- ※ Detection Range Max.(DXH) 12 X 6m
- ※ One key commissioning for easy installation



Daylight Monitoring Version HEC7028

- ※ Tri-level control
- ※ Ambient daylight threshold
- ※ 16 combinations for sensor settings
- ※ Multiple current selections
- ※ Daylight monitoring
- ※ One key commissioning for easy installation



Tri-level Control HEC6028 / HEC6018

- ※ Power factor > 0.9
- ※ Fixed output 350mA (HEC6018) / 700mA (HEC6028)
- ※ Ideal for most economical design



Tri-level Control HEC9025 / HEC9025/I

- ※ Detached sensor antenna, shadow-free
- ※ Multiple current selections
- ※ Detection Range Max.(DXH) 12X6m



Products

NEW! HEM11

DAI LED driver +
Emergency driver +
Occupancy sensor +
Dawn/dusk sensor (SAM7/I)

4 products-in-1!

HEM11 HEM11H

The latest edition to the range featuring a DALI input for control of the main LED driver. The emergency is not DALI but features Hytronik automatic self-test and monitoring diagnostics. HEM11/HEM11H may be used with a wide range of antenna accessories.

HEM09 HEM09H

There are a smart integration of microwave motion sensor, high specification LED driver and multiple wattage, self-testing emergency LED driver for cost-optimised lighting solutions. Save space, save cost, save wiring, save assembly!

HEM09/E HEM09H/E

The range also now includes sensorDIM™ 2 in 1 LED driver and non-selftest emergency driver versions for applications which use an external microwave sensor.



More antenna options on page 39

HEM11 / HEM11H

- ※ DALI version (Main LED Driver Only)
- ※ Self-Testing Features
- ※ Multiple antenna options
- ※ Emergency power @3W
- ※ Output voltage 54V (HEM11)
- ※ High current version output voltage 33V (HEM11H)
- ※ Wide choice of optional Antennas
- ※ One key commissioning for easy installation



HEM09 / HEM09H

- ※ Emergency power @3W 4W 6W
- ※ Self-Testing Features
- ※ Antenna SAM7 is optional
- ※ Output voltage 54V (HEM09)
- ※ High current version output voltage 33V (HEM09H)
- ※ One key commissioning for easy installation



HEM09/E / HEM09H/E

- ※ sensorDIM™ version - for use with external sensor
- ※ Emergency power @3W
- ※ Output voltage 54V (HEM09/E)
- ※ High current version output voltage 33V (HEM09H/E)



Our clever enclosure design allows a short profile for building into the light fixture, or simply attach the end cap accessory kit for stand-alone installation.

Specification

Mains voltage	220~240VAC 50/60Hz
Battery duration	3 hours @ 3W / 4W / 6W
Mains Switch-over voltage range	150VAC~180VAC
Over-heat protection	Over-heat protection
Certification	Semko, CB, CE, EMC

Sensors with RF Wireless Transmission Control

This is a combination of motion sensor and RF radio wave wireless transmission, which is a perfect solution for retrofit projects or in areas where wiring for controls is very limited, such as car parks. The motion detected by 1 sensor (the transmitter unit) can be passed onto other pre-defined receiver units through RF transmission. The RF signal can transmit up to 30 meters indoor and 100 meters in open areas.

Hytronik offer two styles of RF wireless commissioning methods:

- 1) For smaller projects (up to 16 groups within the same transmission range) we offer a rotary switch group selector which allows commissioning by simply selecting the same number on all the units required to talk to each other.
- 2) For larger projects or where more flexibility is required, we employ a 'teach and learn' system where commissioning is carried out by use of a remote-control handset. In this system the number of groups is not limited.

1 Products



Main body HC038V / HCD038

- ※ 1-10V or DALI Dimming
- ※ Compact linear size
- ※ Loop-in and loop-out terminal, easy wiring
- ※ Tri-level control



RF Sensor SAM11

- ※ Both teach and learn + rotary switch
- ※ Serves as both transmitter & receiver
- ※ Daylight Monitoring function
- ※ One key commissioning for easy installation
- ※ FSK mode



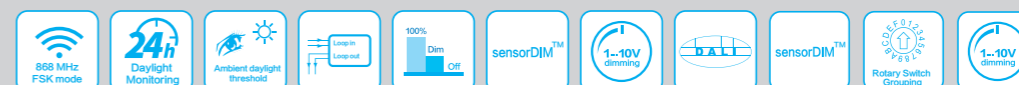
RF Sensor SAM8/RC11

- ※ Teach and learn version
- ※ Serves as both transmitter & receiver
- ※ Daylight Monitoring function
- ※ One key commissioning for easy installation
- ※ FSK mode



RF Receiver HC034RF

- ※ Serves as receiver
- ※ Both teach and learn + rotary switch
- ※ FSK mode
- ※ For use with SAM8 or SAM11
- ※ One key commissioning for easy installation



RF Transceiver HC028V/RF

- ※ Serves as both transmitter & receiver
- ※ Rotary switch for easy grouping
- ※ Daylight Monitoring function
- ※ Manual override access
- ※ FSK mode



RF Transmitter HC018V/RF

- ※ Serves as transmitter only
- ※ Rotary switch for easy grouping
- ※ Daylight Monitoring function
- ※ FSK mode



RF Receiver HC023RF

- ※ Serves as receiver
- ※ Rotary switch for easy grouping
- ※ FSK mode
- ※ On-off Control



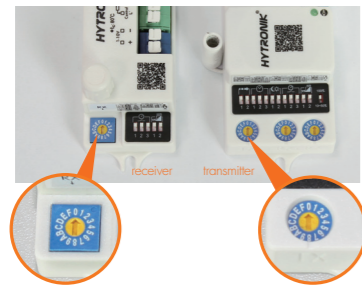
RF Receiver HC024RF

- ※ Serves as receiver
- ※ Rotary switch for easy grouping
- ※ FSK mode
- ※ Tri-level Dimming

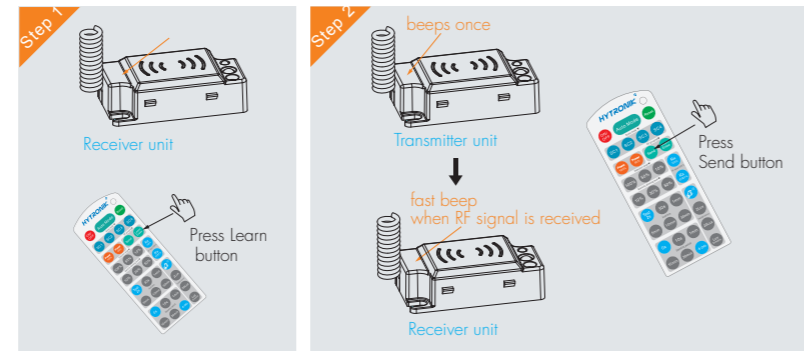


2 Functions and Options

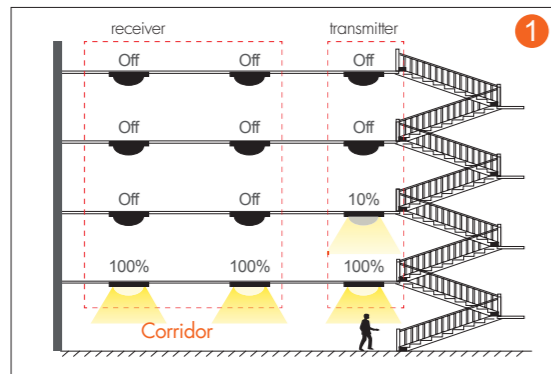
RF grouping (Rotary Switch Commissioning)



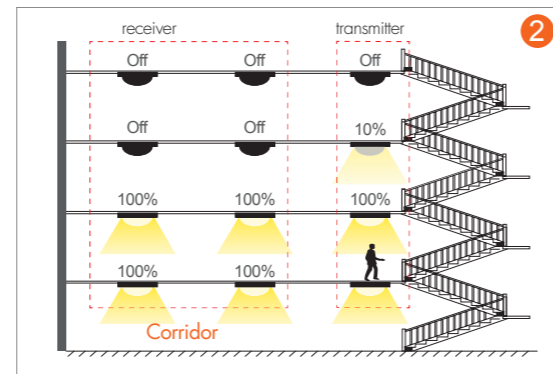
RF grouping (Teach and Learn Commissioning)



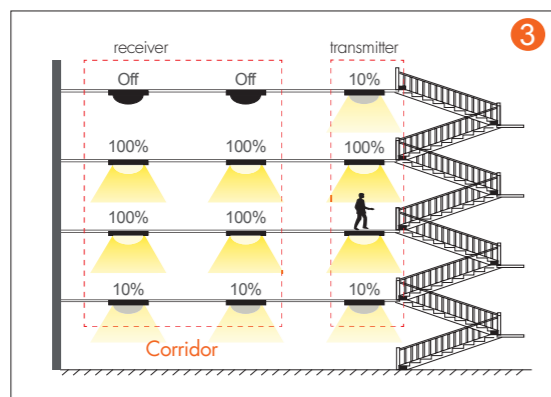
3 Typical Applications for Staircase and Corridor



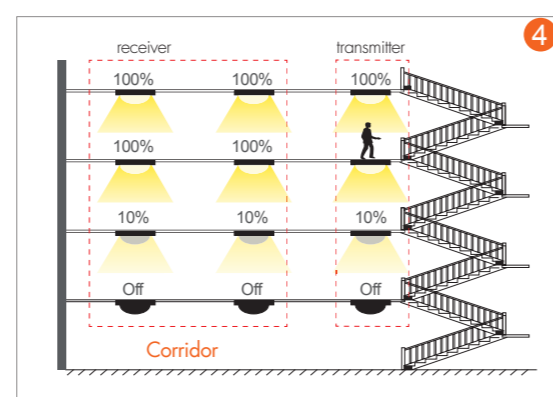
While the 1st sensor detects motion on the 1st floor, it switches the light on 100% and sends signal to all receiver units. All HCO24RF on the 1st floor turn on 100% and the HCO28V/RF on the 2nd floor goes to stand-by level.



The person walks to the 2nd floor, the 2nd HCO28V/RF switches the light on 100%. All HCO24RF on the 2nd floor turn the light on 100% and the HCO28V/RF on the 3rd floor goes to stand-by level.



When walks to the 3rd floor, the 3rd HCO28V/RF switches the light on 100%. All HCO24RF on the 3rd floor turn the light on 100% and the HCO28V/RF on the 4th floor goes to stand-by level. Meanwhile, the lights on the 1st floor are dimmed to stand-by level after hold-time.

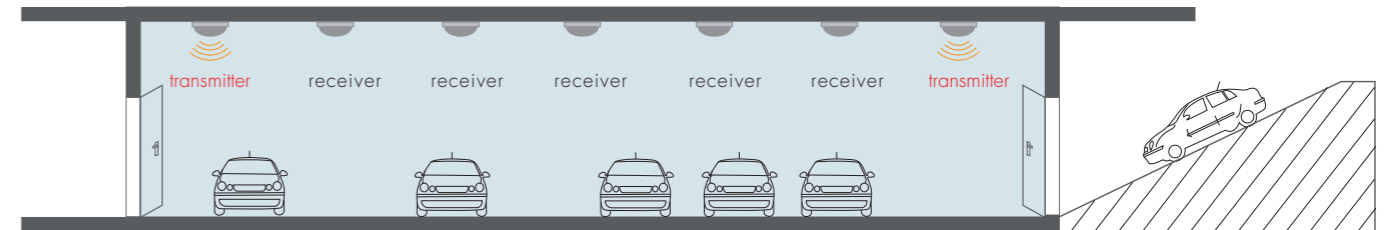


The person walks to the 4th floor, the 4th HCO28V/RF switches the light on 100%. All HCO24RF on the 4th floor turn the light on 100% and the next HCO28V/RF goes to stand-by level. Meanwhile, all sensors on the 1st floor turn the light off after stand-by period, and all lights on the 2nd floor dim to stand-by level after hold-time.

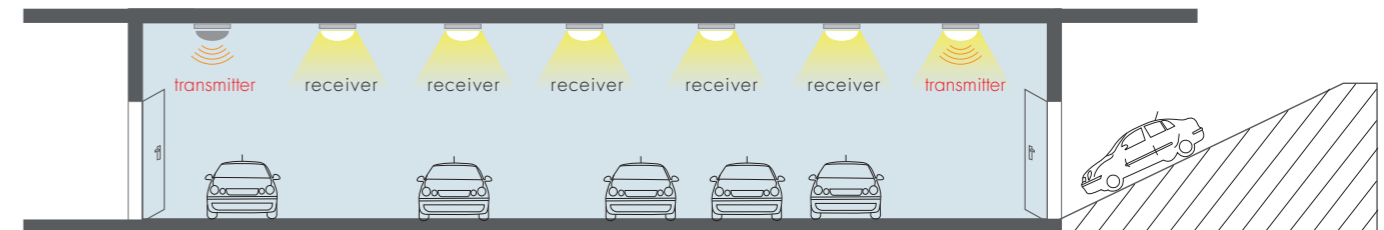
Application: HCO28V/RF as both transmitter and receiver, HCO23RF / HCO24RF as receiver; or SAM8/RC11 / SAM11 as both transmitter and receiver in the staircase, HCO34RF as receiver in the corridor.

Note: the lights in the corridor go off directly after hold-time when controlled by HCO23RF.

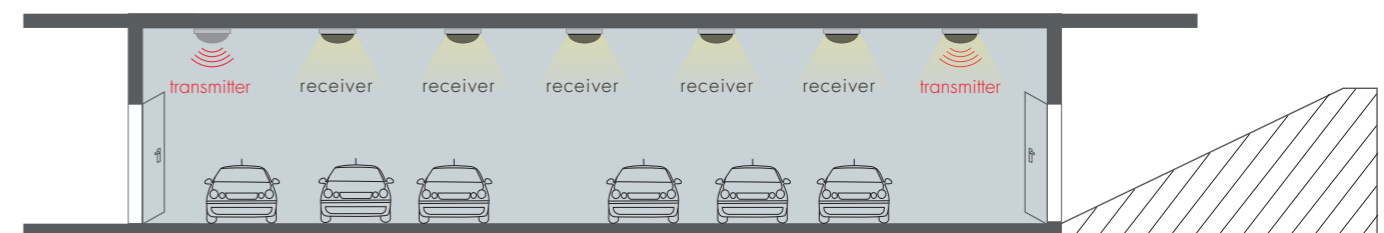
For Carpark



With sufficient natural light, the sensor is not triggered by motion.



With insufficient natural light, the sensor is triggered by motion, the transmitter switches on the light and send RF signal to all salves.



After the hold-time, the whole group of lamps dim to predefined dimming level when no movement detected.

Application: HCO18V/RF as transmitter and HCO23RF / HCO24RF as receiver; or SAM8/RC11 / SAM11 with HCO38V / HCD038 as transmitter HCO34RF as receiver.

Note: the lights go off directly after hold-time when controlled by HCO23RF.

Detection Pattern



Common Technical Data*

Operating voltage	220-240VAC 50/60Hz
Detection range	Maximum (Diameter x Height): 12m x 6m. Detection angle: 30~150°
Mounting height	Maximum 6m
RF. Communication Channels	16 channels for grouping
RF. transmission distance	30 meters indoor, 100 meters in the open area
RF frequency	433 / 868 MHz (FSK mode)
Certification	Semko, CB, EMC, CE, R&TTE, SAA

*Please refer to our website for full technical information of each product

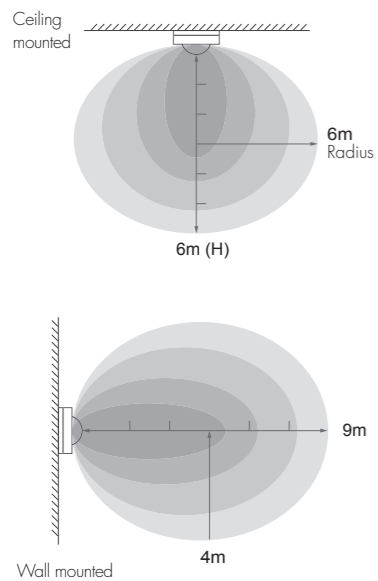
Daylight Harvest

Hytronik offers two solutions for daylight harvesting when building the technology into the luminaire:

1) Using photocell advance technology, behind-the-cover daylight harvesting is now a reality in a single unit.

2) Conventional, yet intelligent and highly integrated PIR/ Photocell/Remote control receiver sensor head unit. The miniature power supply unit can be built into the fixture offering means of control by 1-10V or self-powered (plug n play) DALI output.

Detection Pattern



Daylight harvest has many names in the industry and is considered the ultimate compromise of lighting energy efficiency and comfort. Combined with occupancy sensors the lights are only on when you need them, and when they are on, only as much as they need to be!

Available with or without occupancy sensing, built-in or stand alone, Hytronik has a solution for most applications.

With Occupancy Detection



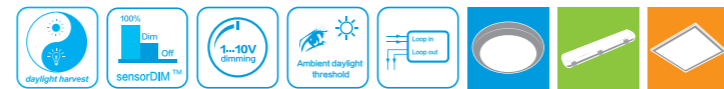
Built-in Version HC419VRC/DH

- ※ Photocell advance technology
- ※ Ambient daylight threshold
- ※ User manual override via Push dim retractable type switch
- ※ One key commissioning for easy installation



1-10V Version HIRO1 + HC038V

- ※ With PIR sensor head HIRO1
- ※ Manual override access
- ※ Loop-in and loopout terminal, easy wiring
- ※ One key commissioning for easy installation



DALI Version HIRO1 + HCD038

- ※ With PIR sensor head HIRO1
- ※ DALI power supply circuit included
- ※ Manual override access
- ※ One key commissioning for easy installation



Daylight Sensor DS02 & DS02/FM

- ※ Works with 1-10V control gear
- ※ For daylight harvest
- ※ Can control up to 50 LED drivers



Microwave Aisle Sensor HCD450VDSRC

- ※ DALI power supply circuit included
- ※ Daylight Harvest
- ※ Dry contact control
- ※ Loop-in and loopout terminal
- ※ 2 channels of load
- ※ Switched power 2X1000W@220-277VAC
- ※ One key commissioning for easy installation

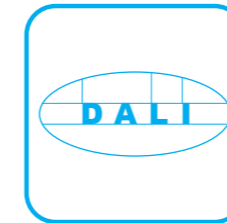
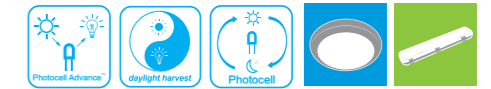


Without Occupancy Detection



1-10V Daylight Harvest DS06

- ※ 'Hidden' Daylight sensor - Photocell Advance technology
- ※ Daylight Harvest version works from behind the cover
- ※ 1-10V Version, maximum load 400W @230V
- ※ Can be used for simple automatic 'on'/'off' control - fixed at 20 LUX



DALI Daylight Harvest DS07

- ※ 'Hidden' Daylight sensor - Photocell Advance technology
- ※ Daylight Harvest version works from behind the cover
- ※ DALI Version, maximum load 30mA (15 LED drivers)
- ※ Plug n' Play DALI, no DALI controller required



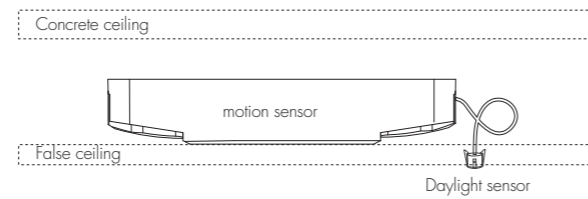
Common Technical Data*

Operating voltage(HIRO1)	5VDC
Switched power (HC038V)	800W(resistive) 400W(capacitive)
Switched power (HCD038)	DALI output, Max. 15 devices/broadcast 30mA / 16VDC
Detection range	Maximum (Diameter x Height): 6m x 5m. Detection angle: 360°
Mounting height	Maximum 5m
Certification	Semko, CB, EMC, CE, R&TTE, SAA

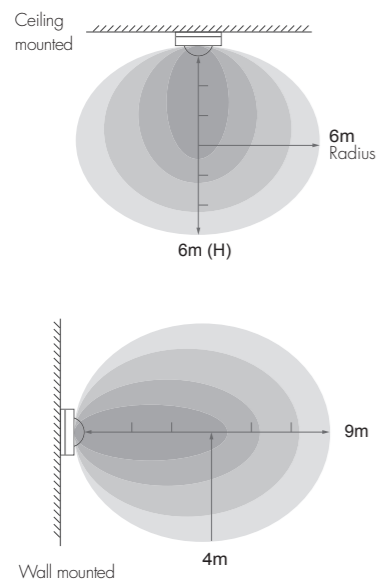
*Please refer to our website for full technical information of each product.

Sensors for False Ceiling

Ideally suited to retrofit projects where the luminaire is too small to accommodate the sensor internally, this motion sensor can be completely hidden from view thanks to the penetration properties of microwave sensors. Only a small hole is required to position the daylight sensor.



Detection Pattern



Products



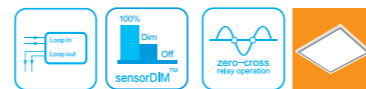
False Ceiling Version HC009S /EXT

- ※ Synchronisation control
- ※ Zero-cross relay operation
- ※ On-off control
- ※ Maximum Load 400W capacitive 1200W resistive



False Ceiling Version HC018V/EXT

- ※ Manual override access
- ※ Zero-cross relay operation
- ※ Tri-level control
- ※ Maximum Load 800W capacitive 2000W resistive



False Ceiling Version HC019V /EXT

- ※ 2 or multiple sensors control the same group of receivers
- ※ Zero-cross relay operation
- ※ Tri-level control
- ※ Maximum load 800W capacitive 2000W resistive



Common Technical Data*

Operating voltage	220-240VAC
Detection range	Maximum (Diameter x Height): 1.2m x 3m. Detection angle: 30~150°
Mounting height	Maximum 3m
Certification	Semko, CB, EMC, CE, R&TTE, SAA

*Please refer to our website for full technical information of each product

Special Applications

There are times when the standard practices are challenged and we need something a bit different. Below are such products that may tick the box! Please see our web-site for further details of these products.

Products



Dry Contact Version HC009SDC

- ※ On/off function
- ※ Built-in installation
- ※ Voltage-free sensor



DC Operation HC501S

- ※ 12V / 24V / 36V / 48V DC Input/Output
- ※ Zero-cross relay operation
- ※ Maximum Load 6A
- ※ Photocell inhibits detection during daytime
- ※ 12m x 6m maximum detection range



For Triac Dimmer HC402S /T

- ※ On-off control
- ※ Triac dimmer decides the dimming level when motion detected.



For Triac Dimmer HC009S /T

- ※ On-off control
- ※ Triac dimmer decides the dimming level when motion detected.



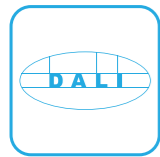
Surface Mounting Enclosures for Motion Sensors

For applications where the sensor simply will not fit in the luminaire, you need a surface mounting option or maybe an IP65 rating. The sensors listed below can be mounted inside the IP box, for stand alone and independent electrical installation. Each box is supplied with suitable fixing screw, blanking grommet and power cable restraint.



Hytronik LED Drivers

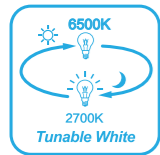
INTRODUCING: Hytronik LED Drivers



Being a member of the DALI group, Hytronik remains compliant with the latest DALI standards for sensor controls. We offer both DALI sensors for DALI systems as well independent DALI sensors (containing DALI power supply) suited to small and medium projects for DALI 'Plug N' Play' installation.



The latest update from DALI has strengthened the way the compliance mark works and imposes more stringent testing in the process.



Dual channel LED drivers which provide white balance control as well as normal brightness control are becoming ever more popular owing to the rise of human centric and circadian rhythm lighting systems.



Stand-by power consumption (zero-load consumption) is an important factor for the total energy saving, calculated as 'parasitic power' in large installations with lighting controls, such as a DALI system. Using Hytronik can improve your LEMI!



Efficiency is the ratio of output wattage versus input wattage. The higher the efficiency is, the less energy is wasted on heat. Furthermore, reducing heat generation is key to increasing the rated life of the control gear.



Low power factor electronic products create distortion to the power network, and reduces the efficiency of the total grid. Hytronik drivers are all designed with active power factor correction to help achieve compliance to EMC standards.



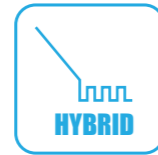
Easy for the end user and installer alike, Switch-DIM is a popular choice for dimming control in the age of LED lighting. Simple wiring, logical operation and smooth dimming response feature in this technology.



A feature of the Switch-Dim technology as many lighting points are often connected to the same switch. As Switch-Dim saves the cost of a centralised dimmer, brightness and colour temperature are required to be synchronised by following our simple procedure from the wall switch.



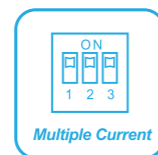
1-10V analogue dimming remains a popular choice of dimming control from centralised dimmers or simple wall switch dimmers, but is gradually being replaced by DALI. However the technology remains valuable, especially when building automated lighting controls directly into the light fixture.



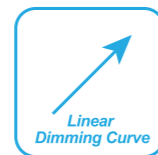
Hybrid dimming is a method used to greatly reduce flicker in LED lighting. Analogue dimming is used when the lamp is at its brightest level and then uses the more traditional method of PWM in a smaller section of the dimming profile to all but eliminate noticeable flicker.



Analogue dimming is the only method in which the lamp is never switched off during dimming (as happens with PWM methods) and represents the flicker free technology of the latest generation of LED drivers.



Multiple current selections cut down the inventory size and cost of stocking LED drivers. Most Hytronik drivers offer a DIP switch for the customer to select the suitable current for different luminaire requirements.



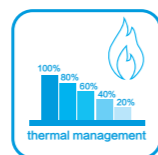
A linear dimming profile means the light is dimmed according to wattage and therefore the light output is dimmed proportionally to the lamp current.



A logarithmic dimming profile means the light is dimmed according to comfort, or in some cases can provide a better match to the response of LED luminaires. Light output is reduced relatively quickly before providing a more gentle response at lower levels.



A feature of constant voltage LED driver designs. Some low voltage lamps which contain self-regulating circuitry start to shut down and in some cases flicker if attempting to operate them at low power levels. This setting allows the minimum dimming level of the LED driver to be set to prevent the lamp entering such a state.



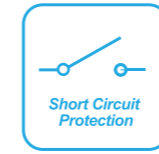
If the LED driver is subject to overloading or overheating, instead of shutting down this smart driver technology reduces the power output in 20% stages until the thermal condition is at a safe level for the driver to work in a stable condition. As the driver cools, the light output goes back to 100%.



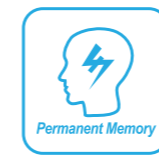
A thermal switch is built-in to prevent key components from overheating. The driver enters self-shutdown mode when the internal temperature reaches the threshold and automatically resumes normal operation when the over-heat condition is reduced or removed.



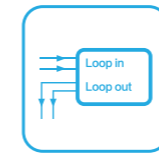
Overload protection works hand-in-hand with the thermal protection circuitry and the LED driver will shut down to protect itself when an abnormal load causes thermal stress on the LED driver. Automatic restart will occur when the abnormal load is removed and the temperature has stabilised.



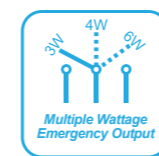
In case of short-circuit, the driver shuts down for protection, and automatically restarts when the short-circuit is removed.



A built-in permanent memory against power failure: the driver remembers and stays at the same status and lighting level as when the power supply was cut-off.



Whether you are saving component cost and assembly work on drivers designed for built-in fixtures, or looking for easy installation on stand alone drivers, Hytronik drivers are designed with the all terminals you need. With this feature, L and N terminals are provided for power in and L' and N' for power out to the load.

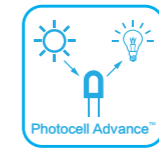


To save inventory cost, Hytronik emergency LED drivers with this feature have 3 optional wattages to fit for different requirements; 3W, 4W & 6W. Simply select the correct battery type from our High Temperature battery range with your requirement of 1, 2 or 3 hours duration.



Self-test feature for emergency lighting. A built-in MCU programmed testing schedule takes care of checking the system components and reports the status via the LED indicator. Self-Testing emergency lighting can provide end-users with reduced maintenance costs.

Further features provided by our intelligent direct - to - driver P.I.R and microwave antenna range:

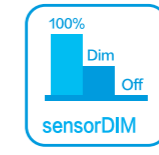


The latest in daylight measurement technology from Hytronik gives freedom to luminaire designers by building features such as daylight harvest and dusk/dawn photocell functionality within the fixture and behind the cover.



Right time, right place and the right amount of light!! Daylight harvest (also known as daylight regulating) provides the ultimate in energy saving solutions when combined with occupancy sensing.

The daylight sensor measures the available surrounding natural light and calculates how much artificial light is needed to reach the target lux level. The control output is passed to our drivers directly by using one of our smart antenna attachments which then delivers only the needed amount of light.



Tri-level control (corridor function) is achieved by not only building the dimming profile into the driver, but also combining the sensor with the product, therefore reducing space requirements and costs. SensorDim can be considered the whole package for tri-level control.



Similar in operation to a dawn/dusk sensor operating from behind the cover, Hytronik's innovative software design provides this function for further energy-savings and smart integration possibilities for luminaire manufacturers. This function is available on featured products when the stand-by period is set to "+∞".



Fast and simple commissioning is possible by using Hytronik newly developed remote controller HRC-11. The settings are programmed once and are then saved on the remote controller as a custom scene. With just one press, the programmed scene can be applied to other sensors.



It is common in LED luminaire lumen output specification to rate the performance after 10,000 hours, which means an installation may be over-lit by as much 20% during the first 10,000 hours. In some cases of a retrofit of fluorescent to LED, the occupants may also complain about discomfort from the new lit environment. This 20% @ 10,000 hrs wasted energy and any discomfort can now be controlled by the press of a button using Hytronik controls. 100% output is simply restored via the remote control.

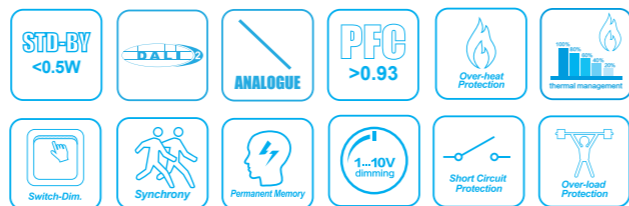
Warranty



Hytronik products are designed and manufactured to the highest standards so that we may offer a 5-Year product warranty to cover product design and manufacturing defects. The warranty applies to component parts supplied by Hytronik and is applicable to the party to which the sale was made. The warranty is not transferable to a 3rd party and compatibility with external components are the responsibility of the finished goods manufacturer.

DAI 2 LED Drivers

DAI/Switch-Dim/1-10V



At the forefront of our DALI driver range, these LED drivers are DALI2 standard ready and have been designed for ultra low stand-by power consumption to reduce 'parasitic power' as defined by EuP/ErP. Features analogue flicker-free dimming, intelligent thermal management and much more. Switch-DIM and 1-10V dimming control inputs are also provided for a truly universal dimming LED driver., allowing for significant reduction of inventory. Comprehensive data sheets for each model are available on our website or technical manual.

Products

Model	Max. Wattage	Output Current/ Voltage Options	Size (L x W x H mm)
 HED6010	10W	195mA / 230mA / 350mA / 500mA	150 x 52 x 28
 HED6020	20W	350mA / 500mA / 700mA / 900mA	150 x 53 x 30
 HED6045	45W	500mA / 700mA / 900mA / 1050mA / 1200mA / 1400mA	140 x 79 x 23
 HED6045L	45W	350mA / 500mA / 550mA / 600mA / 650mA / 700mA / 900mA	140 x 79 x 23
 HED6060	60W	1.05A / 1.2A / 1.4A / 1.6A / 1.75A / 2.0A / 2.1A	220x58x42
 HED6060L	60W	350mA / 500mA / 550mA / 600mA / 650mA / 700mA / 900mA	220x58x42
 HED4030-A	30W	12 VDC	150 x 53 x 30
 HED6030-A	30W	24 VDC	150 x 53 x 30
 HED2075-A	75W	12 VDC	220x58x42
 HED3075-A	75W	24 VDC	220x58x42

*Please refer to our website for full technical information of each product

DAI LED Drivers





Economy Series



The economy range of DALI drivers are designed as a value-added choice for DALI systems which do not utilise any of the extended features of DALI, such as fault feedback. This range is perfectly suited for connection to DALI controls which operate using only broadcast commands, however they may also be addressed and grouped via a DALI transmitter if required. All models feature Switch-DIM control and the 20W model even offer a constant voltage output selection!

Technical Note: We strongly recommend the use of fully isolated DALI Power Supply Units (including those integrated into DALI transmitter units) such as the Hytronik HT02. Comprehensive data sheets for each model are available on our website.

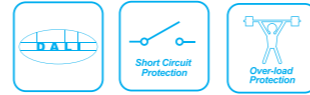
Constant Current Type

Model	Max. Wattage	Output Current/ Voltage Options	Size (L x W x H mm)
 HED2020	20W	350mA / 500mA / 700mA / 900mA/12V/24V	150x52x28
 HED2040	40W	350mA/400mA/450mA/500mA/550mA/ 600mA/650mA/700mA/750mA/800mA/ 850mA/900mA/950mA/1000mA/ 1050mA/1100mA	123x79x30
 HED2050	50W	700mA/750mA/800mA/850mA/ 900mA/950mA/1000mA/1050mA/ 1100mA/1150mA/1200mA/1250mA/ 1300mA/1350mA/1400mA	123x79x30
 HED2060	60W	1.05A / 1.2A / 1.4A / 1.6A / 1.75A / 2.0A / 2.1A	220x58x42



DAI Accessories

DAI PSU

At the heart of any good DALI system is a reliable power supply unit. Hytronik DALI power supplies are fully isolated and the range includes power supplies for building discreetly into equipment or for addition to larger DIN rail mounted systems.



DAI Power Supply

	Model	Power	Max. output current @ DALI	Size (L x W x H mm)
	HT01	6W	240mA	86.5 x 56 x 68
	HT02	6W	240mA	103.2 x 67 x 25
	HT03	3W	90mA	126 x 30 x 21

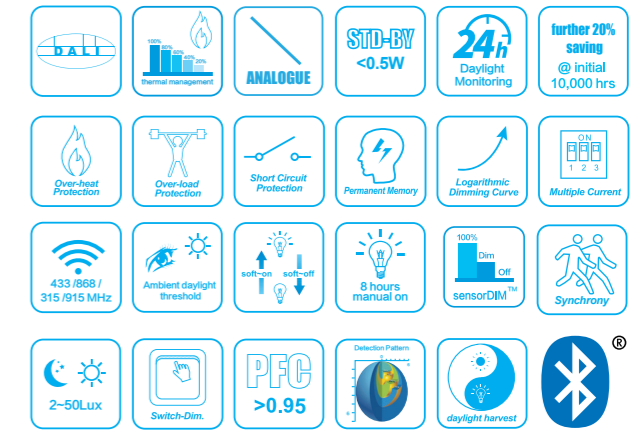
Common Technical Data*


Mains voltage	220~240VAC 50/60Hz
Power factor	≥0.9

*Please refer to our website for full technical information of each product

Hex-Drive™

Hex-Drive is the flagship product range of Hytronik LED drivers. DALI2 ready, it offers low standby power in compliance with EuP/ErP directive, flicker-free dimming, intelligent thermal management and also has 1-10V and switch-DIM dimming capability. However that is just the start of this unique product range as a wide range of our microwave and PIR antenna occupancy sensor attachments allow incredible integration possibilities, offering wireless RF communication, Daylight Harvesting, Daylight Monitoring & Tri-level dimming.



Available in 2018, Hex-Drive will become enabled with  wireless technology



Products

	Model	Max. Wattage	Output Current/Voltage Options	Size (L x W x H mm)
	HED1025	25W	325mA/350mA/375mA/400mA/425mA/450mA/475mA/500mA/525mA/550mA/575mA/600mA/625mA/650mA/675mA/700mA	269 x 36 x 21 
	HED1045	45W	500mA / 700mA / 900mA / 1050mA / 1200mA / 1400mA	140 x 79 x 23 
	HED1050H	50W	500mA/550mA/600mA/650mA/700mA/750mA/800mA/850mA/900mA/950mA/1000mA/1050mA/1100mA/1150mA/1200mA	390 x 40 x 22 
	HED1050L	50W	225mA/250mA/275mA/300mA/325mA/350mA/375mA/400mA/425mA/450mA/475mA/500mA/525mA/550mA/575mA/600mA	390 x 40 x 22 
	HED1080H	80W	900mA/950mA/1000mA/1050mA/1100mA/1150mA/1200mA/1250mA/1300mA/1350mA/1400mA/1450mA/1500mA/1550mA/1600mA/1650mA	390 x 40 x 22 

※ More antenna options on page 39

Common Technical Data*

Mains voltage	220~240VAC 50/60Hz
Power factor	≥0.9

*Please refer to our website for full technical information of each product

Technical Note: We strongly recommend the use of fully isolated DALI Power Supply Units (including those integrated into DALI transmitter units) such as the Hytronik HT02. Comprehensive data sheets for each model are available on our website.

1-10V/SwitchDIM LED Drivers



Hytronik offer a versatile and cost-effective range of dimming LED drivers which combine both Analogue 1-10V dimming and SwitchDIM protocols. Our range includes multiple current selections so a wide range of LED fixtures may be operated from a small inventory. Constant current (CC) and

constant voltage (CV) types are both available and selected models feature both CC and CV options for even greater flexibility. Suitable for design into LED luminaires and perfect for supplying as upgrades to fixed output products.

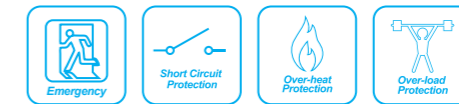
Products	Model	Max. Wattage	Output Current/ Voltage Options	Size (L x W x H mm)
	HE8008-A	8W	350mA/500mA/550mA	52x50x22
	HE1008-A	8W	350mA/500mA/550mA	80x53x22
	HE8030-A	30W	250mA/ 300mA/ 350mA/ 400mA/ 450mA/ 500mA/ 550mA/ 600mA/ 650mA/ 700mA/ 750mA/ 800mA/ 850mA	150x52x28
	HE8050-A	50W	350mA/500mA/550mA/600mA/ 650mA/700mA/800mA/900mA/ 1050mA	123x79x30
	HE4030-A	30W	12 VDC	150 x 53 x 30
	HE6030-A	30W	24 VDC	150 x 53 x 30
	HE2075-A	75W	12 VDC	220x58x42
	HE3075-A	75W	24 VDC	220x58x42

Please refer to our website or catalogue for full technical information of each product

Emergency Drivers

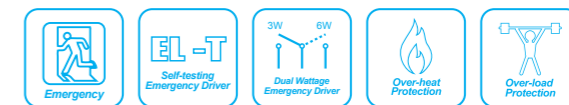
Hytronik offer a range of standard and self-test emergency LED drivers. Designed to operate in the emergency mode on the low-voltage (LED input) circuit, they feature full isolation of the standard LED driver to ensure compatibility. Efficient driver technology allows selection of low cell count and reduced space requirements for the best combination of reliability, cost and usability. New additions to our established range are fully integrated 'combo' LED/Emergency drivers, with option to connect to a full featured cost and space-effective antenna attachment, or an external sensor as per more conventional solutions. The ranges are available for external mounting with insulated terminals, or aluminium cased versions for best thermal management when mounted internally in the fixture.

Economy Version



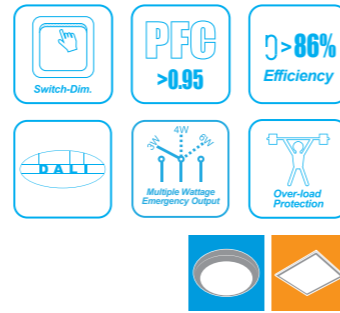
Products	Model	Max. Wattage	Output Current/ Voltage Options	Size (L x W x H mm)
	HEM02	3W	320mA~40mA	150 x 53 x 30
	HEM07	3W	300mA~40mA	160 x 40 x 22

Self-Test Version



Products	Model	Max. Wattage	Output Current/ Voltage Options	Size (L x W x H mm)
	HEM06-T	3W/6W	260mA~40mA@3W 350mA~80mA@6W	150 x 53 x 30
	HEM07-T	3W	230mA~40mA	180 x 40 x 22

Integrated Emergency 3-in-1 and 2-in-1 'Combo'



HEM11 and HEM11H Feature a DALI input for control of the main LED driver. The emergency is not DALI but features Hytronik automatic self-test and monitoring diagnostics. HEM11 / HEM11H may be used with a wide range of antenna accessories.

HEM09 and HEM09/H are full featured versions with Auto test and for use with Hytronik SAM7 or SAM7/FM occupancy sensors, if required. HEM09/E and HEM09H/E are basic versions without Auto test and external sensor input.

Products	Model	Max. Wattage (Emergency)	Output Current/Voltage Options	Size (L x W x H mm)
	HEM11	3W	250mA/350mA/500mA/600mA/700mA/750mA	140 x 79 x 23
<small>More antenna options on page 39</small>				
	HEM11H	3W	900mA/1050mA/1200mA/1400mA	140 x 79 x 23
<small>More antenna options on page 39</small>				
	HEM09	3W/4W/6W	350mA/500mA/550mA/700mA/750mA/900mA	140 x 79 x 23
	HEM09/E	3W	350mA/500mA/550mA/700mA/750mA/900mA	140 x 79 x 23
	HEM09H	3W/4W/6W	900mA/1050mA/1200mA/1400mA	140 x 79 x 23
	HEM09H/E	3W	900mA/1050mA/1200mA/1400mA	140 x 79 x 23



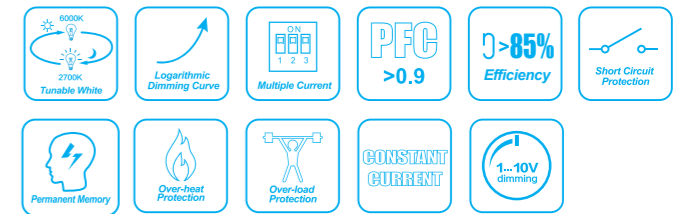
Our clever enclosure design allows a short profile for building into the light fixture, or simply attach the end cap accessory kit for stand-alone installation.

Common Technical Data*

Mains voltage	220~240VAC 50/60Hz
Power factor	≥0.95

*Please refer to our website for full technical information of each product

Human Centric Lighting Tunable White



Human Centric (Stand-alone)

HER1045 offers Human Centric Lighting ideally suited for smaller projects requiring single or point-by-point control. The real-time international clock is simply set and calibrated by the remote control handset. Combined with occupancy sensing and daylight harvest attachments, this product offers big specification functionality without the need for big specification budget.



Model	Max. Wattage	Output Current/Voltage Options	Size (L x W x H mm)
HER1045	45W	350mA/500mA/700mA/900mA/1050mA/1200mA	140 x 79 x 23

Now with an optional choice of occupancy sensor technology:
Microwave antenna (SAM5/DH) or PIR (HIRO5/FM)

Tunable White

HER3045 is controllable via remote control and/or conventional switch-DIM and 1-10V controllers. Ideally suited to small displays, accent lighting and hotel comfort lighting, including halogen dimming simulation with your tunable white LED lamp.



Model	Max. Wattage	Output Current	Size (L x W x H mm)
HER3045	45W	350mA/500mA/700mA/900mA/1050mA/1200mA	140 x 79 x 23



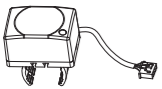






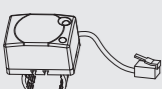



Our clever enclosure design allows a short profile for building into the light fixture, or simply attach the end cap accessory kit for stand-alone installation.




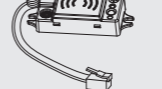
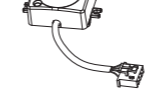

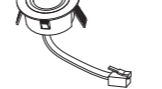




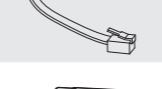

Common Technical Data*

Mains voltage	220~240VAC 50/60Hz
Power factor	≥0.9

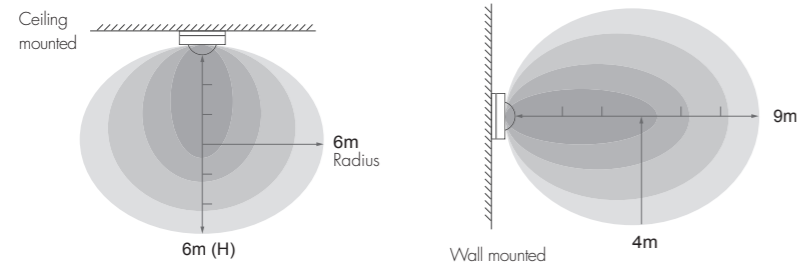
*Please refer to our website for full technical information of each product

Sensor (SAM) Options

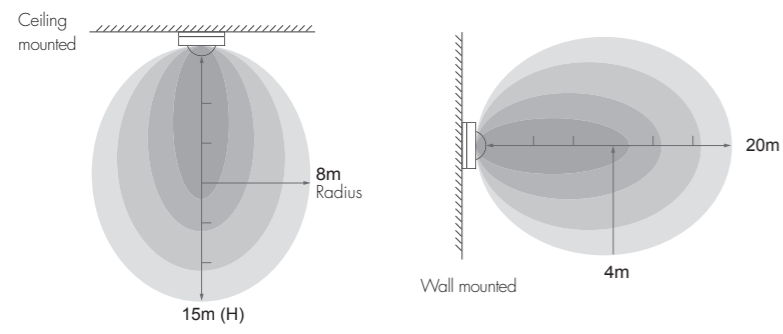
SAM	Model	For use with	Remote control	Features	Size (L x W x H mm)	Installation hole (mm)
	SAM3	HC009S-KD; HC403V-KD; HEC8025; HEC9025	N/A	Antenna Photocell	45.2 x 32.2 x 26.5	/
	SAM4	HC009S-KD; HC403V-KD; HEC8025; HEC9025	N/A	Antenna Photocell	30.7 x 25.2 x 12	/
	SAM5	HC403VRC-KD; HC404VRC-KD; HEC7030; HC603VRC-KD	HRC-05; HRC-11	Antenna Photocell IR receiver	30.7 x 25.2 x 13	/
	SAM5/FM	HC403VRC-KD; HC404VRC-KD; HEC7030; HC603VRC-KD	HRC-05; HRC-11	Antenna Photocell IR receiver Flush Mounting	φ 48 x 20.3	41
	SAM5/IP65	HC403VRC-KD; HC404VRC-KD; HEC7030; HC603VRC-KD	HRC-05; HRC-11	IP65 Antenna Photocell IR receiver Flush Mounting	φ 41 x 19.3	17
	SAM5/DH	HER1045	HRC-09	Antenna Photocell IR receiver Flush Mounting	φ 48 x 20.3	41
	HIRO5/FM	HER1045	HRC-09	Antenna Photocell IR receiver Flush Mounting	φ 48 x 20.3	41
	SAM6	HC403VRC-KD; HC404VRC-KD; HC603VRC-KD	HRC-05; HRC-11	1.6m x 1.5m Antenna Photocell IR receiver	45.2 x 32.5 x 26.5	/
	SAM7	Hex-drive series; 3-in-1 multi-drive; HC038V; HCD038	HRC-05	Tri-level control	52.5 x 31.2 x 16	/
	SAM7/FM	Hex-drive series; 3-in-1 multi-drive; HC038V; HCD038	HRC-05	Tri-level control	φ 48 x 20.3	41
	SAM8/RC11	Hex-drive series; HC038V; HCD038	HRC-11	Tri-level control (RF)	52.5 x 31.2 x 16	/

SAM	Model	For use with	Remote control	Features	Size (L x W x H mm)	Installation hole (mm)
	SAM9	HC403VRC-KD; HEC7030 HC603VRC-KD	N/A	Antenna Photocell	30.7 x 25.2 x 12	/
	SAM10	HER3045	HRC-08	N/A	φ 48 x 20.3	/
	SAM10/FM	HER3045	HRC-08	N/A	φ 48 x 20.3	41
	SAM11	Hex-drive series HEM11 / HEM11H HC038V; HCD038	HRC-11	Tri-level control (RF)	71.5 x 31.7 x 16	/
	SAM12	HEC9025/1	HRC-05	Antenna Photocell Advanced IR receiver	30.7 x 25.2 x 13	/
	HIRO1	Hex-drive series HEM11 / HEM11H HC038V; HCD038	HRC-11	Daylight harvest (PIR)	39.5 x 30 x 25.8	20
	HIRO1/FM	Hex-drive series HEM11 / HEM11H HC038V; HCD038	HRC-11	Daylight harvest (PIR)	φ 48 x 20.3	41
	HIRO2	Hex-drive series HEM11 / HEM11H HC038V; HCD038	HRC-05	Tri-level control (PIR)	39.5 x 30 x 25.8	20
	HIRO3	Hex-drive series HEM11 / HEM11H HC038V; HCD038	HRC-11	Daylight harvest (PIR)	44.5 x 17 x 19.5	/
	HIRO4	Hex-drive series HEM11 / HEM11H HC038V; HCD038	HRC-11	Tri-level control (PIR)	44.5 x 17 x 19.5	/
	DS02/FM	1-10V LED drivers	HRC-11	Daylight harvest	φ 48 x 20.3	41
	HBT01	Hex-drive series HEM11 / HEM11H HC038V; HCD038	Android APP iOS APP	Bluetooth Photocell Advance™ Daylight harvest	71.5 x 31.7 x 16	/
	HBT02	Hex-drive series HEM11 / HEM11H HC038V; HCD038	Android APP iOS APP	Bluetooth Photocell Advance™ Relay Switch	71.5 x 31.7 x 16	/

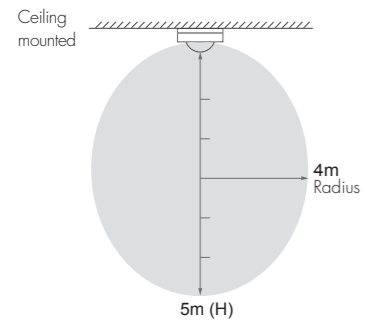
Detection Pattern - Generic Microwave



Detection Pattern - Microwave High Bay



Detection Pattern - Infrared



Note: Range adjustment is disabled on PIR models