

H2A

HEALING LIGHT

H2A - HEALING LIGHT

H2A is a **daring architectural lighting concept** that was initially developed by reputed hospital planners in collaboration with the Modular Design Team. New concepts and modern technologies increasingly characterise operations in modern hospitals and nursing homes. The product characteristics of H2A lie at the interface between concept and technology. H2A's **clean, minimalist and individualistic design** is perfectly complemented by the required **technological characteristics** which light must comply with in modern healthcare. Different dimming systems, such as the DALI protocol, pushdim and analogue dimming, make it possible to generate different colours of light. This compatibility of the technology used makes the synergy complete.

H2A is a modular system which offers **tailored lighting solutions**. In particular, the different combinations that can be made with polycarbonate, reflector, wattage and dimming make the system flexible from all perspectives. Modular developed H2A specifically for the health sector in an endeavour to create '**functional, pleasant and aesthetically sound lighting**'. The well-being of patients and staff are of central importance in modern provision of services. H2A is able to combine a number of diverse functionalities which can have an effect on patient and staff activity. In modern healthcare, artificial light must be adapted to the atmosphere and purpose of the room'. Efficiency in the healthcare personnel's work activities can be achieved by combining functional lighting for examinations with good basic lighting. Moreover, lighting must create a pleasant atmosphere for the patient. This is because **varying the intensity and colour temperature of light** creates natural lighting which stimulates people and actively contributes to the patient's positive experience and healing process. H2A is also characterised by a **restrained, simple architectural design**, which means that the profile can be integrated into the room very inconspicuously. H2A is a 'thoroughbred' modular product: unique, authentic, high-quality and pioneering.

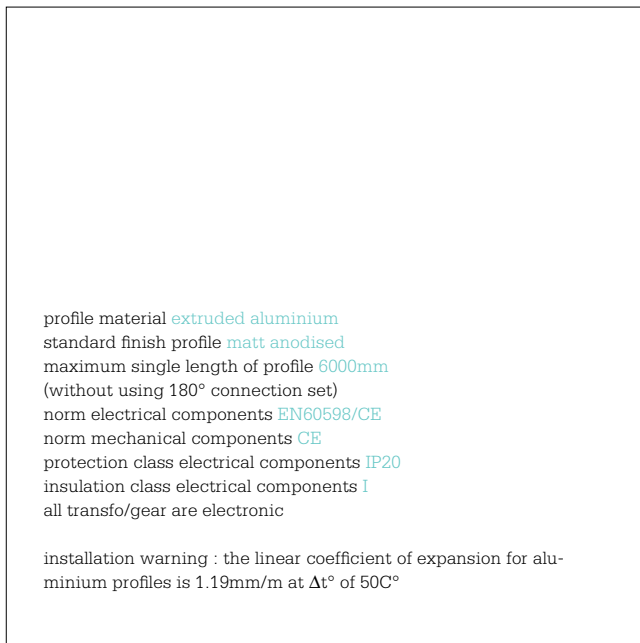
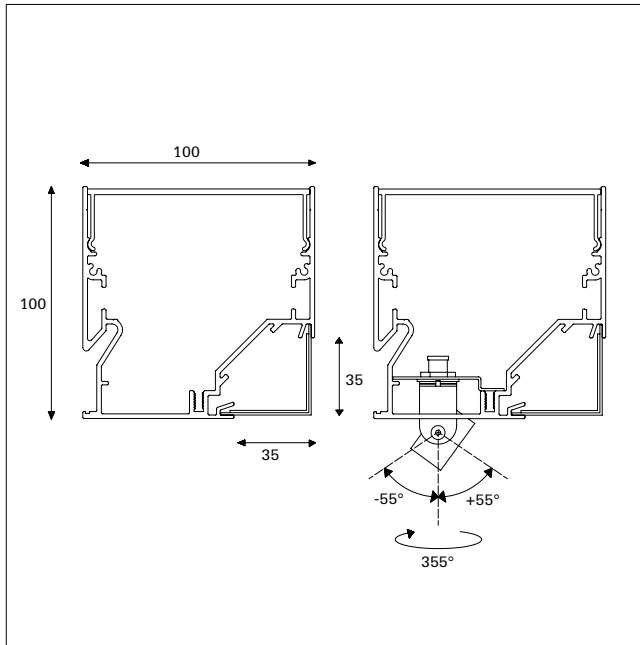


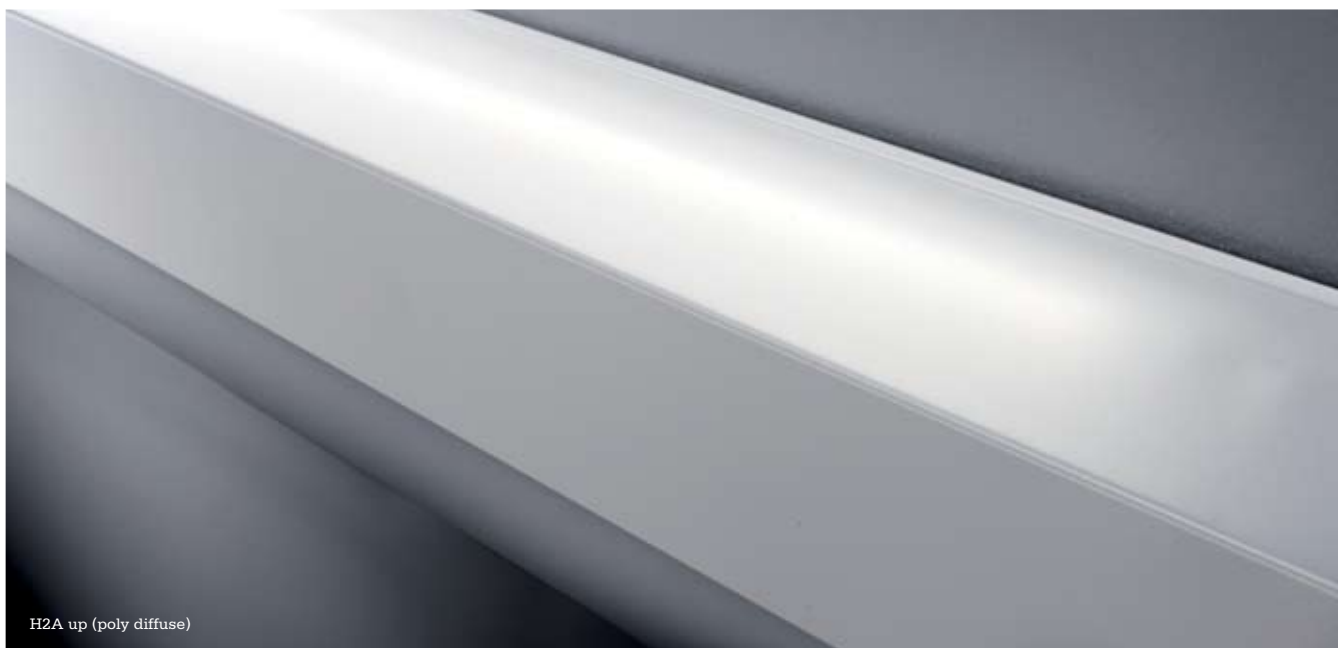
H2A
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6 Product data

H2A





H2A up (poly diffuse)



H2A emergency unit



H2A LED conv. down

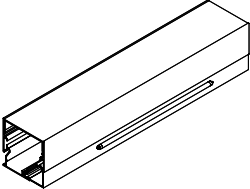
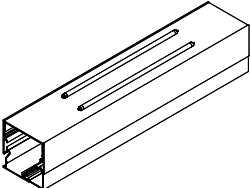
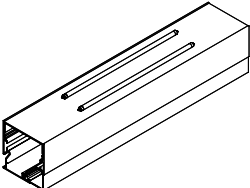
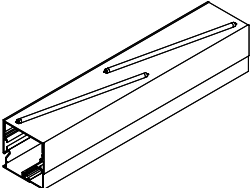


H2A LED conv. front



H2A down

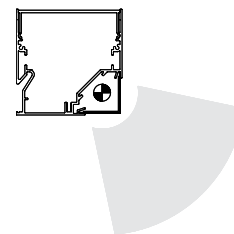
H2A electrical

	Non dimmable				1-10V				Pushdim				Dali				
	lamp	article nr	mod	asym	sym	article nr	mod	asym	sym	article nr	mod	asym	sym	article nr	mod	asym	sym
TL5 poly down 	1x T16 24W	93365122	575	575	575	96365122	575	575	575	97365122	575	575	575	98365122	575	575	575
	1x T16 39W	93365137	875	875	875	96365137	875	875	875	97365137	875	875	875	98365137	875	875	875
	1x T16 54W	93365152	1175	1175	1175	96365152	1175	1175	1175	97365152	1175	1175	1175	98365152	1175	1175	1175
TL5 poly up 	2x T16 24W	93365022	590	590	590	96365022	590	590	590	97365022	590	590	590	98365022	590	590	590
	2x T16 39W	93365037	890	890	890	96365037	890	890	890	97365037	890	890	890	98365037	890	890	890
	2x T16 54W	93365052	1190	1190	1190	96365052	1190	1190	1190	97365052	1190	1190	1190	98365052	1190	1190	1190
TL5 poly up / mix 	2x T16 24W					96365023	590	590	590	97365023	590	590	590	98365023	590	590	590
	2x T16 39W					96365033	890	890	890	97365033	890	890	890	98365038	890	890	890
	2x T16 54W					96365053	1190	1190	1190	97365053	1190	1190	1190	98365053	1190	1190	1190
TL5 cont. poly up 	T16 depends on length	93360300				96360300				97360300				98360300			

H2A mechanical

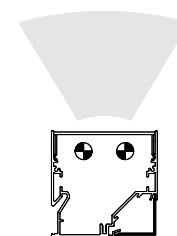
h up	h down	c dist	c-o up	c-o down
				35x35
				35x35
				35x35

options available
93361012 - tl5 back up 3h unit 24/39/54w (1 lamp)



h up	h down	c dist	c-o up	c-o down
			96	
			96	
			96	

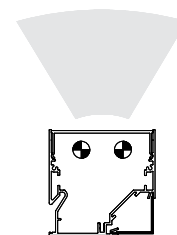
options available
93361012 - tl5 back up 3h unit 24/39/54w (1 lamp)



h up	h down	c dist	c-o up	c-o down
			96	
			96	
			96	

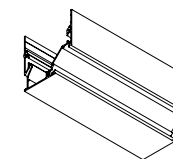
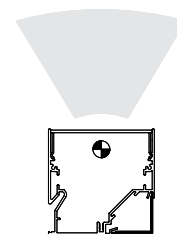
options available
93361012 - tl5 back up 3h unit 24/39/54w (1 lamp)

remarks
by preference to be used with two lamps that have a different colour temperature (cold white – warm white), as both lamps are operated by an individual ballast.

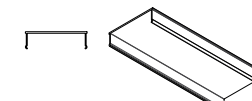


h up	h down	c dist	c-o up	c-o down
			96	

options available
93361012 - tl5 back up 3h unit 24/39/54w (1 lamp)



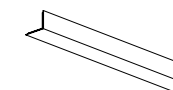
93360005
profile alu /m



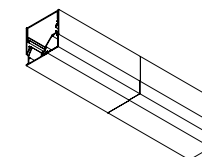
93360015
poly up diffuse

93362000 suppl. extra circuit /m (2 standard)
93368050 ral* set up charge
93360108 ral* suppl. profile surface /m

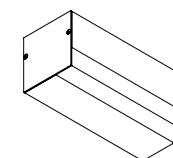
93360025
poly up transparant



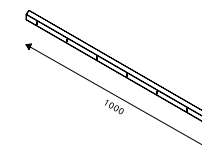
93360007
poly down diffuse



93360050
connection 180°



93360180
endplate



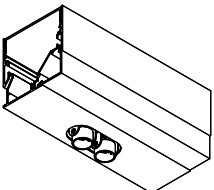
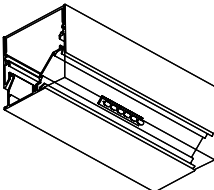
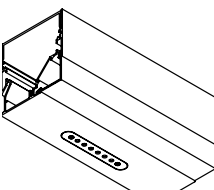
93360999
suspension bracket

93360188 ral* suppl. endplate

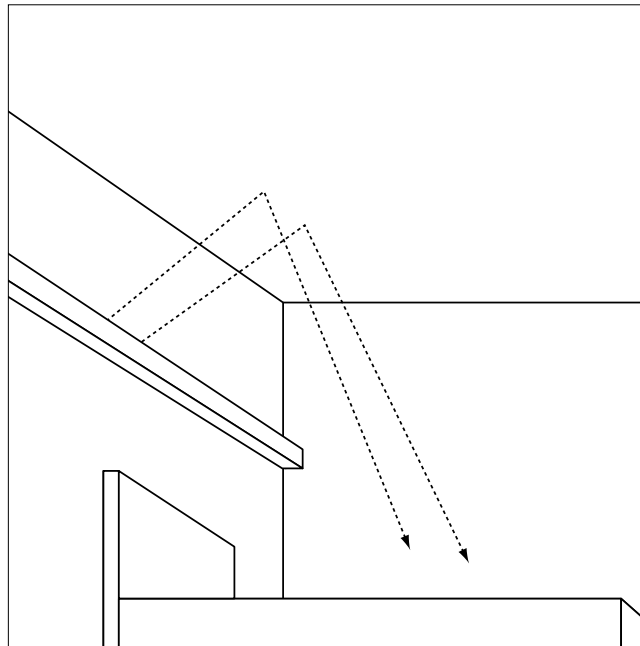
10 Product data

H2A electrical

Non dimmable

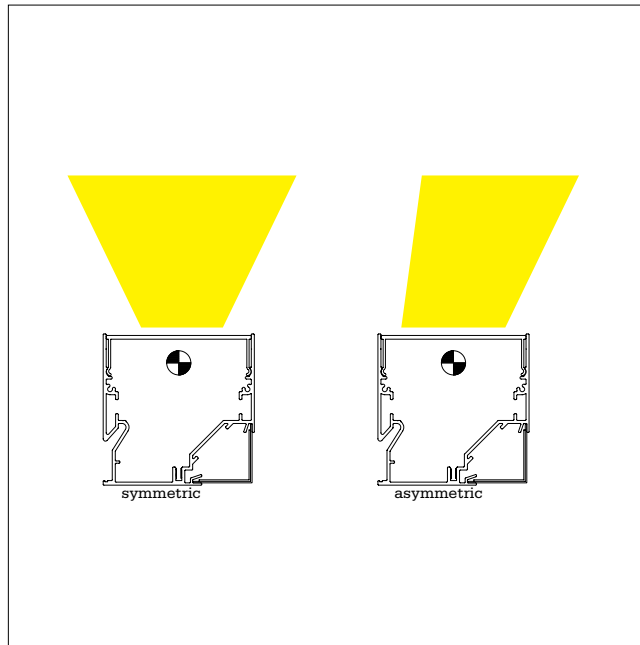
LED high power		lamp	article nr	mod	asym	sym	h up	h down	c dist	c-o up	c-o down
	1x LED 1W cool	93360602	45	156	99		13	140/30000			Ø35
	2x LED 1W cool	93360612	83	195	118		13	175/30000		2x Ø35	
	1x LED 1W warm	93360603	45	156	99		13	140/30000			Ø35
	2x LED 1W warm	93360613	83	195	118		13	175/30000		2x Ø35	
adjustability h 355° -55/+55°							remarks unit=black LED gear not incorporated 93360615 - gear LED driver (350 mA 8W IP67)				
LED conv. front		lamp	article nr	mod	asym	sym	h up	h down	c dist	c-o up	c-o down
	1x LED 1W ice white	93360632	70	100	100				115/30000		
	1x LED 1W blue	93360633	70	100	100				115/30000		
	1x LED 1W red	93360634	70	100	100				115/30000		
	1x LED 1W amber	93360635	70	100	100				115/30000		
remarks LED gear not incorporated 93360655 - gear conventional 6 LED (max. 13 x 6 LED)											
LED conv. down		lamp	article nr	mod	asym	sym	h up	h down	c dist	c-o up	c-o down
	1x LED 1W ice white	93360642	70	100	100				115/30000		
	1x LED 1W blue	93360643	70	100	100				115/30000		
	1x LED 1W red	93360644	70	100	100				115/30000		
	1x LED 1W amber	93360645	70	100	100				115/30000		
remarks LED gear not incorporated 93360655 - gear conventional 6 LED (max. 13 x 6 LED)											

LIGHT EMISSION symmetric / asymmetric



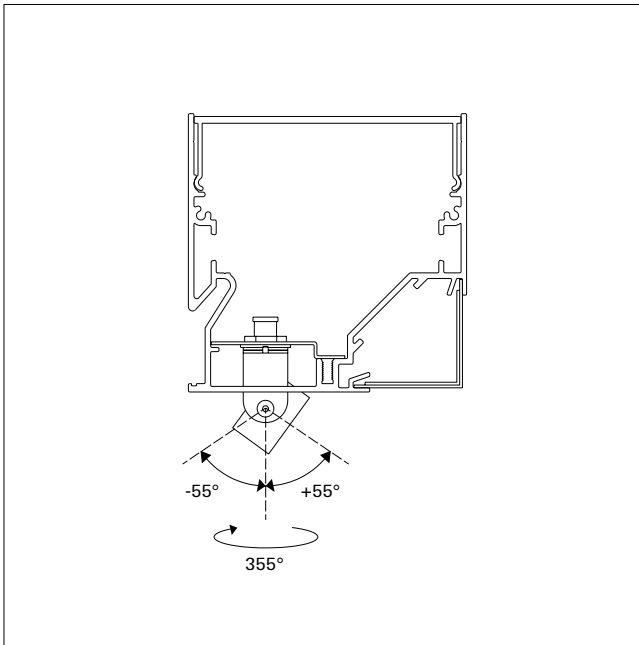
When using indirect light the golden rule is that the entry angle for the light should be the same as the exit angle.

Two factors which also determine whether a symmetrical or asymmetrical light output is necessary are the **position of the installation and the choice of material**. The distance between the H2A fitting and the ceiling surface is also decisive for the exit angle of the light. The material and colour chosen for the ceiling and wall also determine the degree of light reflection. The option of integrating a symmetrical or asymmetrical light output in H2A makes it possible to cope with the above variations in assembly, materials and colours. By equipping H2A with a **symmetrical or asymmetrical light output**, Modular guarantees **optimum indirect light radiation** specific to the room design/fixtures and the installation facilities.

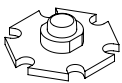


The H2A-profile's continuous fluorescence uplight module is equipped with a white symmetrical reflector on a standard basis. This provides an even light output. An asymmetrical light output is available as an option and this ensures that the light shines on the target surface under a corner. This means that the light strength prescribed by the standard can be obtained in the room.

HIGH POWER LED accent light and light colour



The H2A High Power LED module is a unique development that was designed as an **accent light and/or reading light**. The High Power LED is the latest generation LED, which makes it possible to offer high output. High Power LED is a compact spotlight source which is **energy saving and efficient**. The LED is encapsulated in a lens which means the light dispersal is packed into a 15° angle. Thanks to the 355° **horizontal** and approximately 55° **vertical directability**, the one or two lamp LED module can be pointed at the optimum reading surface that the patient wishes to create for him or herself. The LED module is equipped with cold white (6000 Kelvin) or warm white LEDs (3200 Kelvin).



H2A 1xLED high power (cool white)



H2A 2xLED high power (warm white)

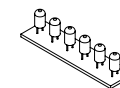


CONVENTIONAL LED orientation and colours

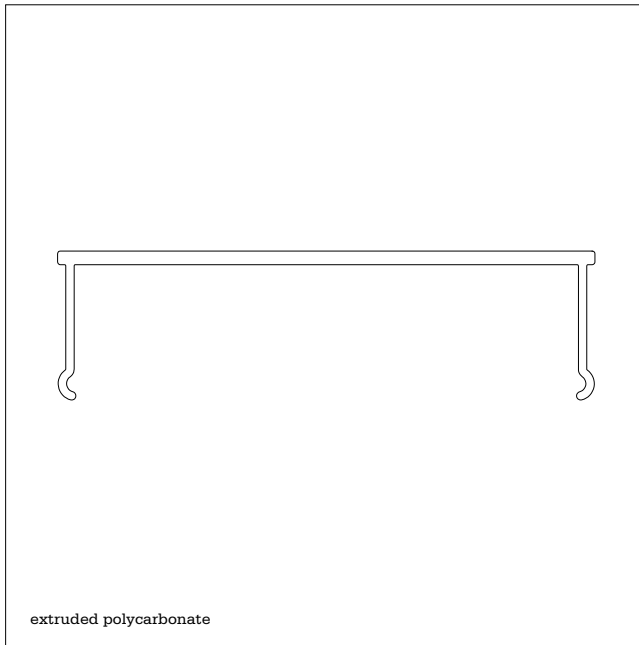


A conventional **4 colour** (amber, red, blue and white) LED module provides minimum orientation lighting at night for staff or patients. The 6x5mm conventional LED (Light Emitting Diode) comprises a lead frame onto which a chip is soldered. Due to its relatively low light output, the conventional LED is specifically used in the H2A profile for **indirect and direct orientation lighting**.

On the one hand H2A can contain conventional LEDs which spread diffuse light because they are built in behind the matt polycarbonate in the profile. On the other hand, direct orientation light can be created. The conventional LEDs below the H2A profile actually spread the light through an opening in the profile.



POLY TRANSPARENT / DIFFUSE



Modular has developed a **polycarbonate extrusion** specifically for H2A which consists out of **one piece of 6000mm**. This development means that the polycarbonate is more robust, easy to install and guarantees a perfect finish for easy-cleaning purposes. Furthermore, the extruded polycarbonate has passed the incandescent filament test (960°) and the material is categorised as IEC 60598-1

The lighting module for indirect room lighting can be equipped with one or two T16 24W/39W or 54W lamps. The upper side of the H2A module is finished with a **transparent or diffuse polycarbonate**. Polycarbonates create a difference in light output and aesthetics. Modular's advice is decisive, particularly in the area of light output.

COLOUR FINISH



The H2A basic profile is supplied in **anodised aluminium** on a standard basis. However it is possible to powder paint the profile in the typical **Modular colours** (white structure, black structure) and in any other **RAL colour**. Thanks to this flexibility, H2A meets the requirement of creating a good feeling in the most diverse interior designs. The RAL-coloured profiles have a glossy or structured finish.

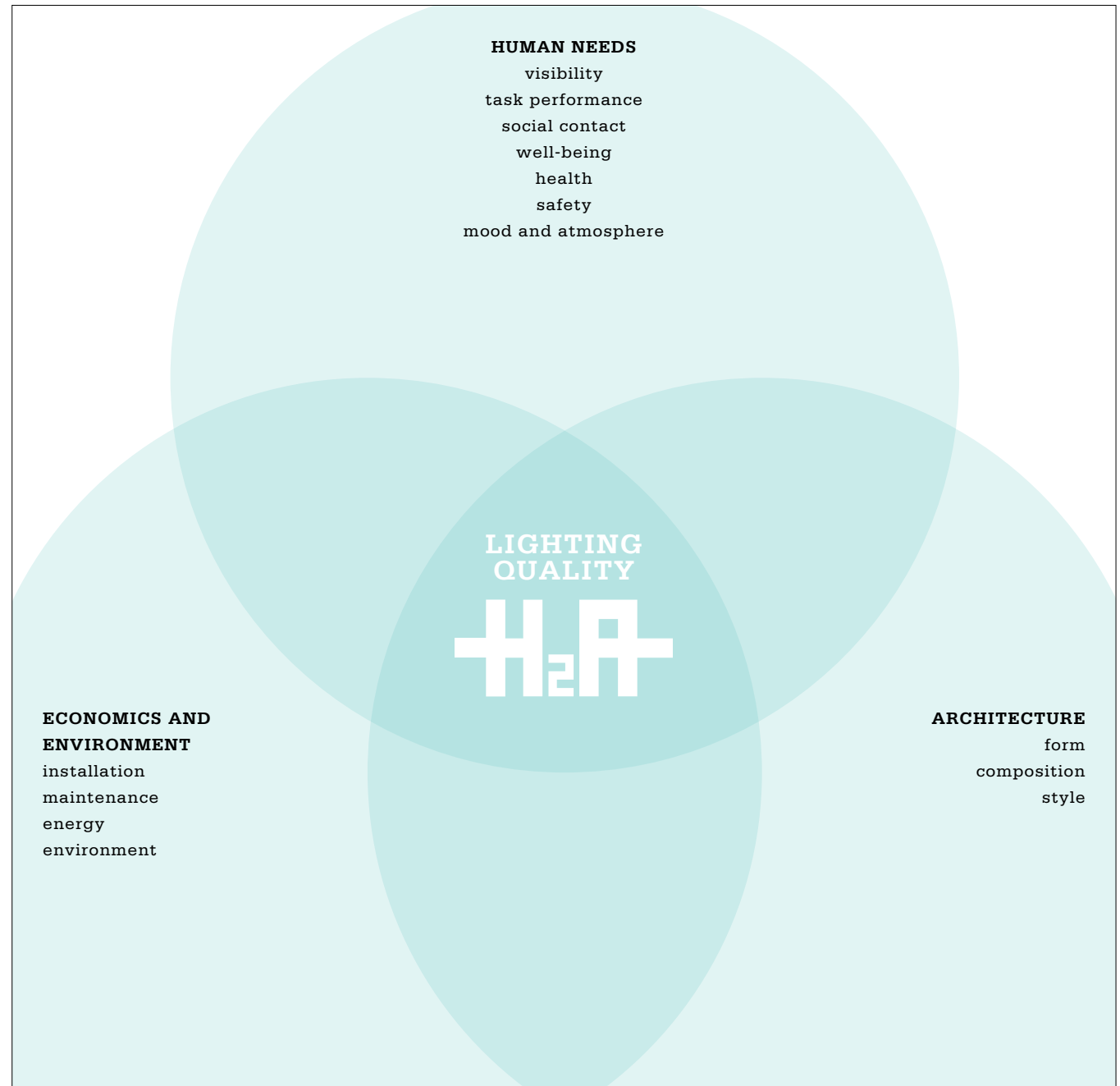


H2A, MADE TO MEASURE PROFILE

H2A is a flexible and modular system that offers made to measure lighting solutions. Different characteristics can be adjusted in relation to the application. Finally, the **lighting study** and **lighting calculation** will prescribe the correct characteristics in order to offer an **ideal lighting solution**.

H2A flexibility in short:

- 1.made to measure length of the profile
- 2.different lighting modules available
 - a.T5 continuous
 - b.2xT5 warm, cold or alternating warm/cold
 - c.High Power or conventional LED-modules
- 3.polycarbonate transparant or diffuse
- 4.colour finish
- 5.possibility to stear dimming systems
- 6.daylight dimming through use of optical sensor
- 7.emergency unit
- 8.asymmetrical light emission optional



H2A module uplight

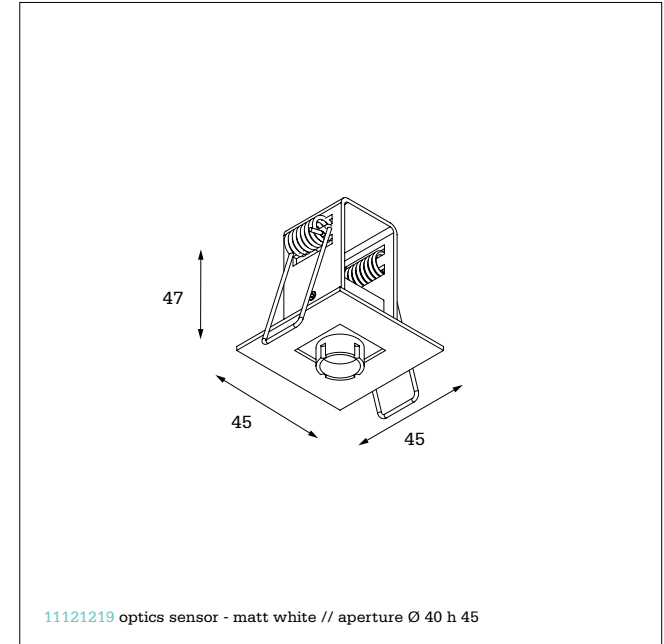


Due to the modular features of the system, H2A is a lighting profile which can combine different light intensities and ambiances with one another.

The **one lamp** continuous lighting line contains T5 24W/39W/54W with a **cold** or **warm white lighting colour** that can be **operated** by **3 dimming systems**: 1-10V, dali and pushdim. In particular, the **two lamp** module, which can be equipped with a double circuit, makes it possible to create the appropriate restful or stimulating atmosphere with **two light colours** (warm white and cool white). Both systems (one or two lamps) can be generated by the optics sensor on condition that 1-10V dimming is applicable.

! Polar diagram uplight modules: p21

OPTICS SENSOR



The optical sensor is mechanically set to a specific lux value. The sensor **measures the variation in light strength** in the room and then sends a signal to a maximum of twenty 1-10V ballasts which are connected to 1 circuit. The system provides an **energy-saving solution** because the sensor dims the lamps accordingly as daylight increases.

H2A modules downlight



The angular polycarbonate that closes off the slanting side of the H2A profile illuminates when a T5 down module is integrated. Depending on the selected lamp power (24W, 39W or 54W) the **lighted zone becomes bigger or smaller**. The direct light output from the different modules is reinforced by using an **integrated white reflector** to create better reading, working or ambient lighting among other things.

! Polar diagram downlight modules: p21

H2A LED modules



1x LED high power + poly up cont. T5 24/39/54W



2x LED high power + poly up cont. T5 24/39/54W



1x LED conv. + poly up cont. T5 24/39/54W

The H2A **High Power LED** module is a unique development that was designed as an **accent light and/or reading light**. The LED is encapsulated in a lens which means the light dispersal is packed into a 15° angle. Thanks to the 355° horizontal and approximately 55° vertical directability, the one or two lamp LED module can be pointed at the optimum reading surface that the patient wishes to create for him or herself. The LED module is equipped with cold white (6000 Kelvin) or warm white LEDs (3200 Kelvin) with 49 lumen per watt and 37 lumen per watt respectively.

! Polar & Beam diagram LED modules: p21

A **conventional LED module** in 4 colours provides minimum orientation lighting at night for staff or patients.

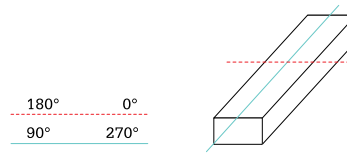
On the one hand, H2A can contain conventional LEDs which spread **diffuse light** because they are built in behind the matt polycarbonate in the profile. The diffuse light effect is reinforced by the fact that a small **matt polycarbonate** is placed **before the lenses**.

On the other hand direct orientation light can be produced. The LEDs which spread light towards the wall under the H2A profile sit in a single line with the lowest polycarbonate.

DIAGRAMS beam and polar

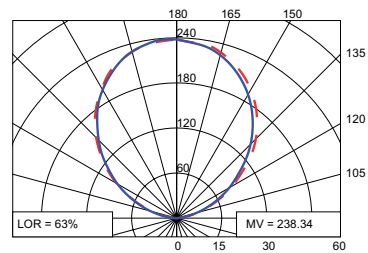
Legend polair diagram

MV = maximum value (in cd/klm)
 LOR = light output ratio
 all values in cd/klm

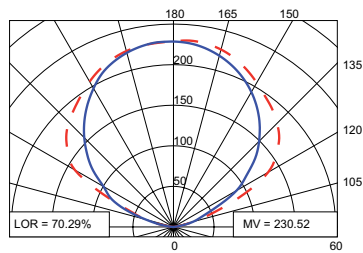


Legend beam diagram

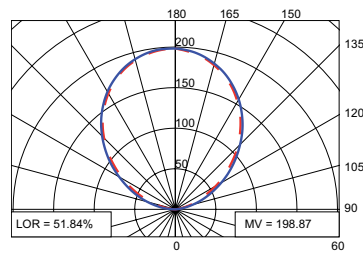
H(m) = distance in meter between light source and reference level
 Eav = average illuminance level
 D(m) = diameter of the light source at half intensity
 η = efficiency



93360300 H2A cont. poly up T5 HO line G5 +
 93360015 H2A poly up diffuse



93360300 H2A cont. poly up T5 HO line G5 +
 93360025 H2A poly up transparent



933650xx H2A module 2 x T5 up +
 93360015 H2A poly up diffuse

H(m)	Eav(lx)	D(m)
1.00	294 lx	0.24
2.00	73 lx	0.47
3.00	33 lx	0.71
4.00	18 lx	0.95
5.00	12 lx	1.18

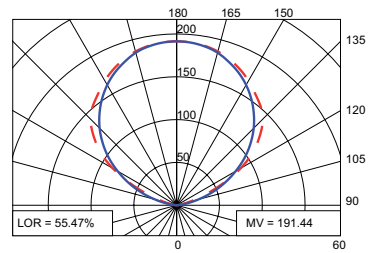
49 lm beam angle 14° η = 100%

93360602 H2A 1 x LED cool white

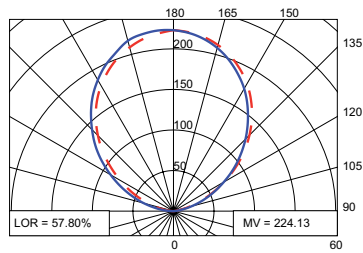
H(m)	Eav(lx)	D(m)
1.00	309 lx	0.22
2.00	77 lx	0.45
3.00	34 lx	0.67
4.00	19 lx	0.89
5.00	12 lx	1.12

37 lm beam angle 13° η = 100%

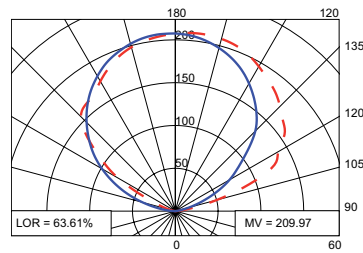
93360603 H2A 1 x LED warm white



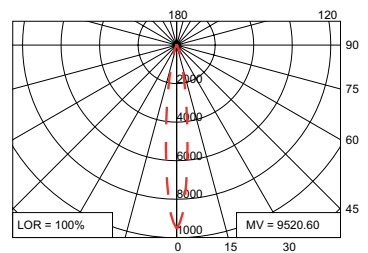
933650xx H2A module 2 x T5 up +
 93360025 H2A poly up transparent



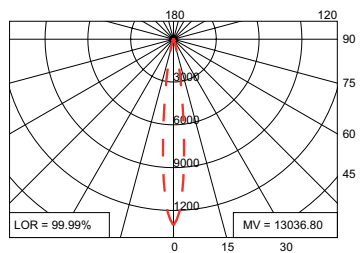
933650xx H2A module 2 x T5 up (1lamp) +
 93360015 H2A poly up diffuse



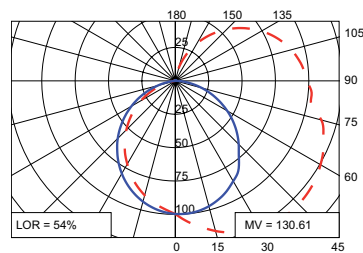
933650xx H2A module 2 x T5 up (1 lamp) +
 93360025 H2A poly up transparent



93360603 H2A 1 x LED warm white



93360602 H2A 1 x LED cool white



933651xx H2A 1 x T5 poly down

LIGHTING CALCULATIONS

ROOM DIMENSIONS

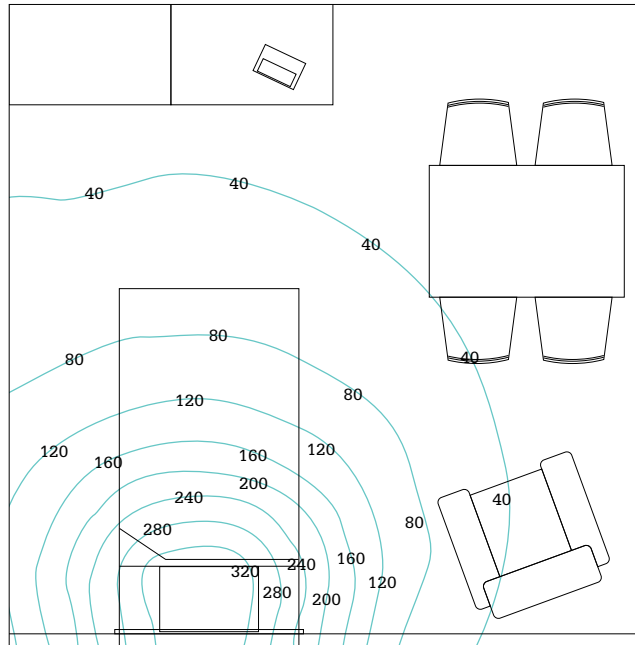
width	4.20m
depth	3.90m
height	2.80m

REFLECTANCE VALUES

ceiling/wall/floor	70/50/30 %
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LUMINAIRE

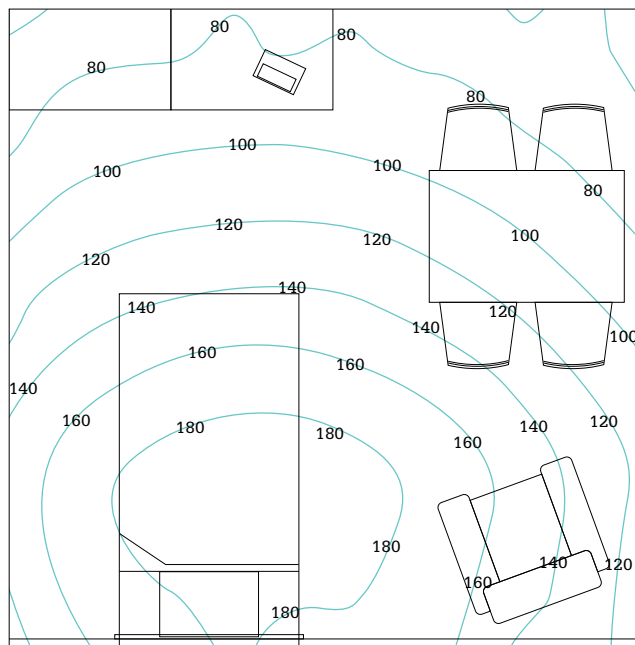
height above floor	2.10m
light loss factor	v=0.8



CASE 1

equipment 1xT5 54W poly down
 height calculation surface 1.10m
 average lux value on reading surface 302 lx

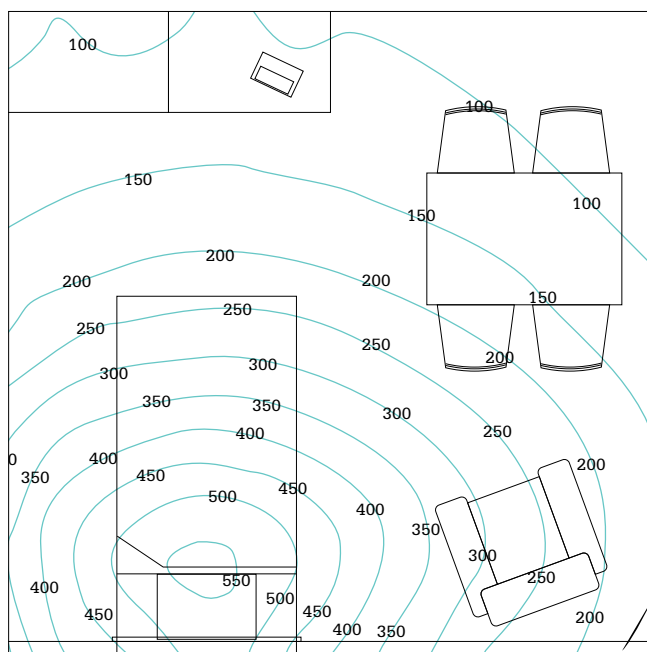
The H2A 1x54W downlight module measured at a height of 1.1m gives the minimum required 300 lux as an average result on a reading surface of 300x900 mm.



CASE 2

equipment 4xT5 54W poly up
 height calculation surface 0.00m
 average lux value at floor level 127 lx

The H2A indirect uplight module alone achieves the minimum required 100 lux on average at floor level in this set-up.



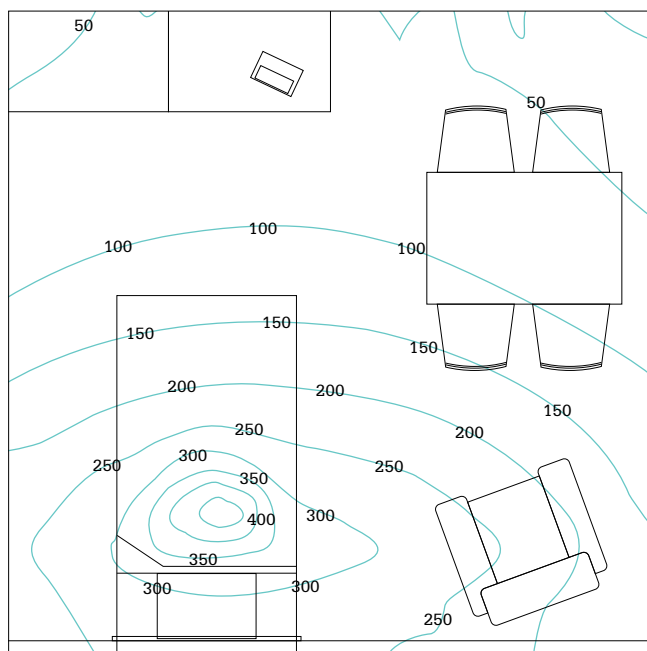
CASE 3

equipment 4xT5 54W up + 1xT5 54W poly down

height calculation surface 0.85m

average lux value at examination level 421 lx

The H2A indirect uplight module, combined with a 1x54W down module achieves the minimum required 300 lux on average at a height of 0.85 m on the bed. This combination is deemed as adequate for examination lighting.



CASE 4

equipment 4xT5 54W up + 2x LED high power warm white

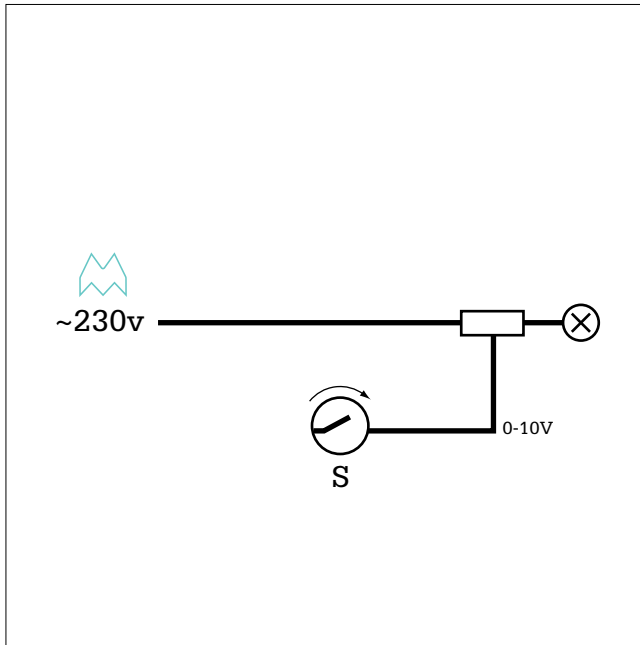
height calculation surface 1.10m

average lux value on reading surface 355 lx

The combination of H2A 4x54W with 2 high power LEDs creates sufficient reading light at a height of 1.1 m over a surface of 300x900 mm. This also indicates that the LED module is more an ancillary light, and not a stand-alone reading light.

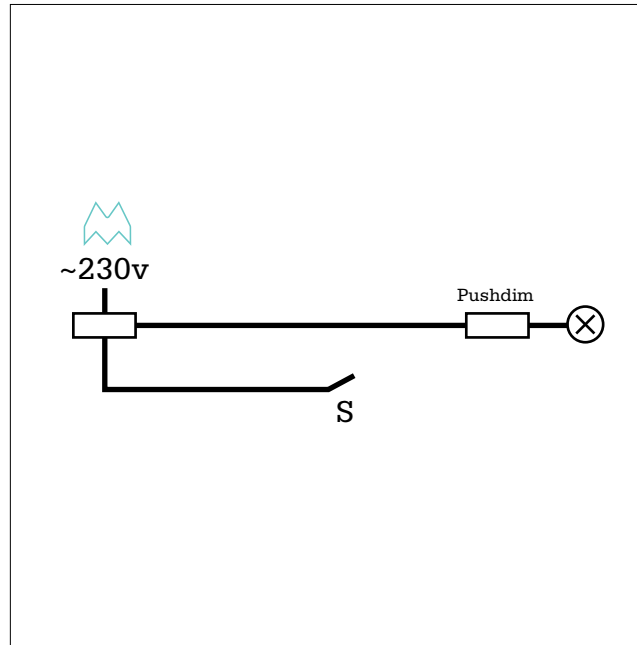


1-10 V dimming system



The **light output can be regulated** from **0.1% to the maximum** with 1 to 10V dimming. The dimmer is switched off at 1V (it acts as a solid-state relay). The dimmer can be a potentiometer (revolving dimmer), a dmx panel or another 1 to 10V control here.

PUSH DIM dimming system

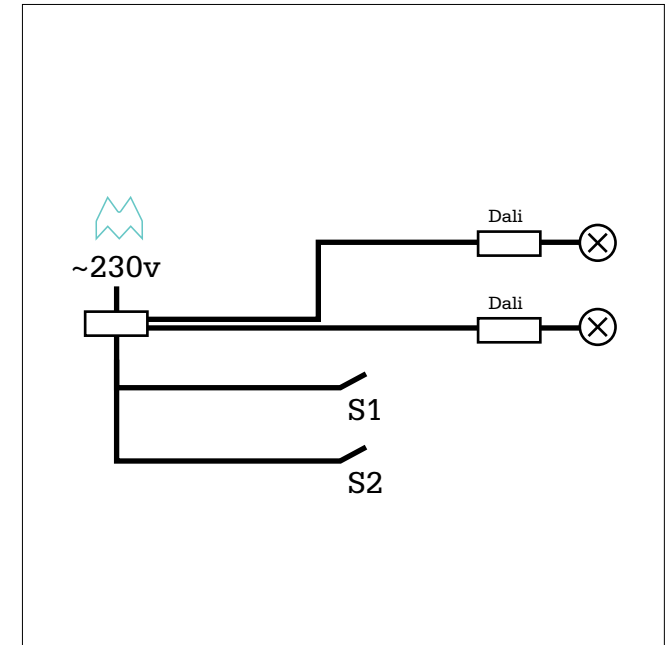


PUSH dim means that an intelligent **preswitching device reacts to two signals**:

1. pressing the switch briefly produces an on/off signal. By doing so the power is sent to the lamp (on) or interrupted (off).
2. pressing the switch for a long time activates a dimming function. The light intensity decreases or increases depending on whether the user pushes for a short or long time.

The push dim system also contains a **memory** so that the last dimming state is reactivated after switching off and switching on again.

DALI dimming system



With DALI dimming, the intelligent preswitching devices acts as an **address**. Each switch can control a lamp or call up a **predefined ambience**. The relationships between preswitching devices and switches can be modified digitally at any time. Predefined dimming statuses can also be assigned to switches.



'EASY MOUNTING'



01 draw straight line on wall



02 drill fixation holes on line



03 plug in plugs for wall construction



04 fix mounting rail



05 remove upper polycarbonate



06 remove reflector



07 drill power feed hole in back of profile
(min. 12mm)



08 put wire through opening



09 hang profile on the mounting rail



10 lock profile on rail by fixing the screws



11 make electrical connection



12 place back the reflector and fix



13 place lamp



14 place polycarbonate

'EASY RELAMPING' upper side



01 remove upper polycarbonate



02 remove lamp



03 place new lamp



04 place polycarbonate

'EASY CLEANING'



01 use cloth to remove dust from top cover

'EASY RELAMPING' lower side



01 remove lower polycarbonate



02 remove lamp

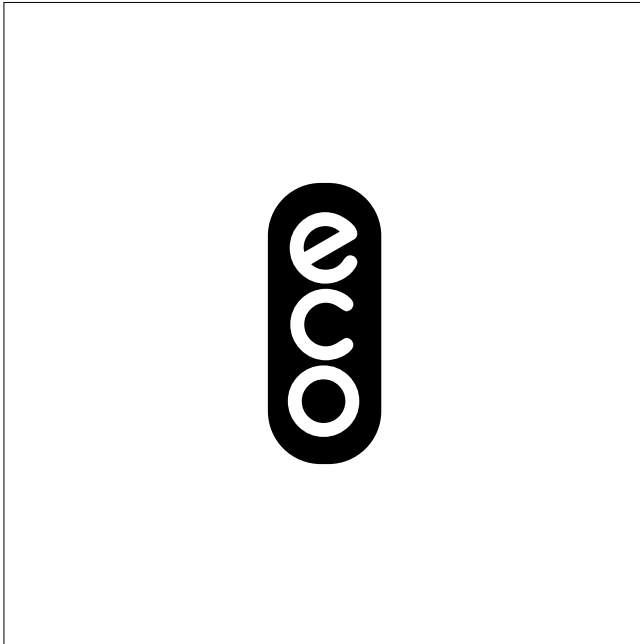


03 place new lamp



04 place polycarbonate

ECO LABEL

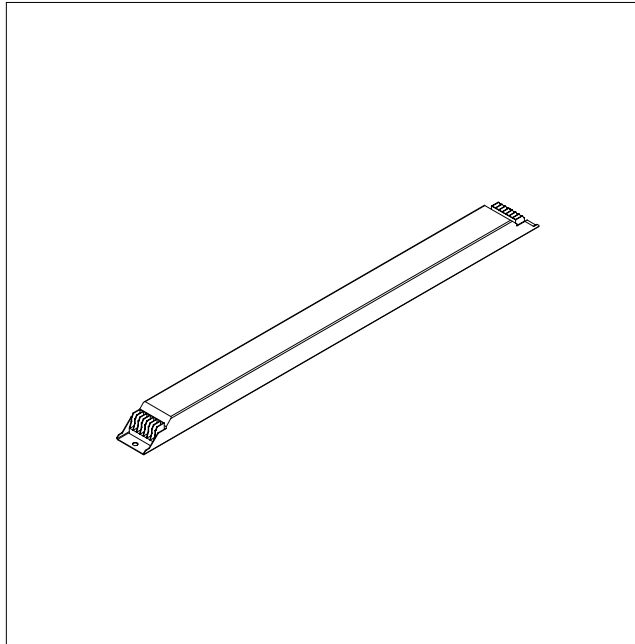


Energy saving is a burning issue when renovating or building hospitals or public clinics. Using light sources efficiently is one of the ways in which the energy bill can be reduced.

H2A is a new product development which can be called **energy-efficient** at different levels. Modular started research some years ago on integrating environmentally-friendly features into its production process and products. The **Modular ECO label** combines the three most important pillars. A new product development must meet at least one of the three criteria to be able to carry the ECO label:

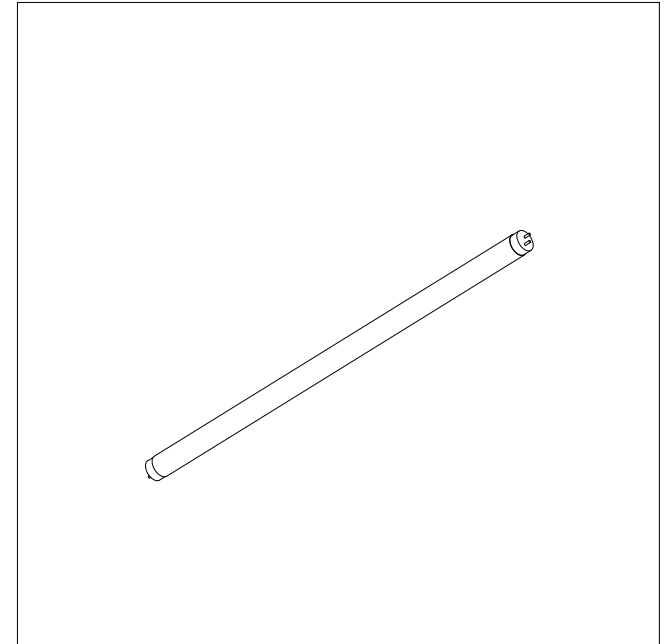
1. Long lifespan of the light source
2. High output from the light source, expressed in lumen per watt
3. Integration of electronic ballasts

ELECTRONIC GEAR



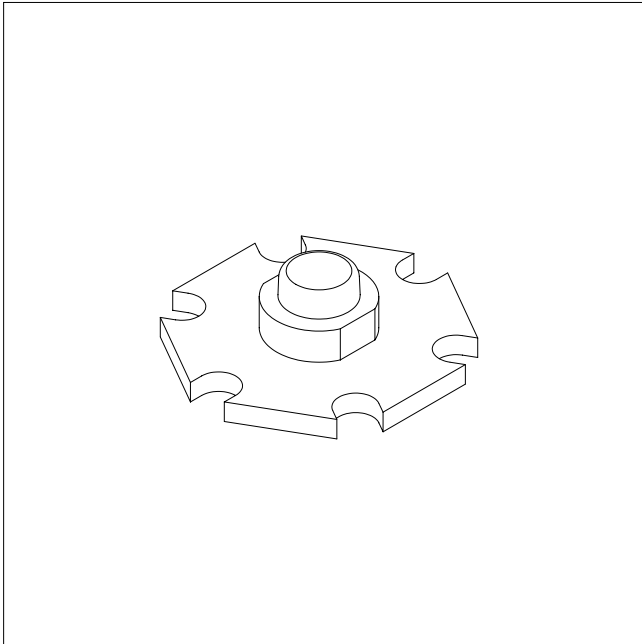
H2A is equipped with electronic ballasts which can be adjusted using the three commonest dimming protocols: 1-10V dimming, push dim and DALI. Thanks to this compatibility of the system, **regulating the intensity of artificial light** by using movement detectors or automatic daylight control systems is an easy way of using the light source as efficiently as possible.

FLUORESCENCE



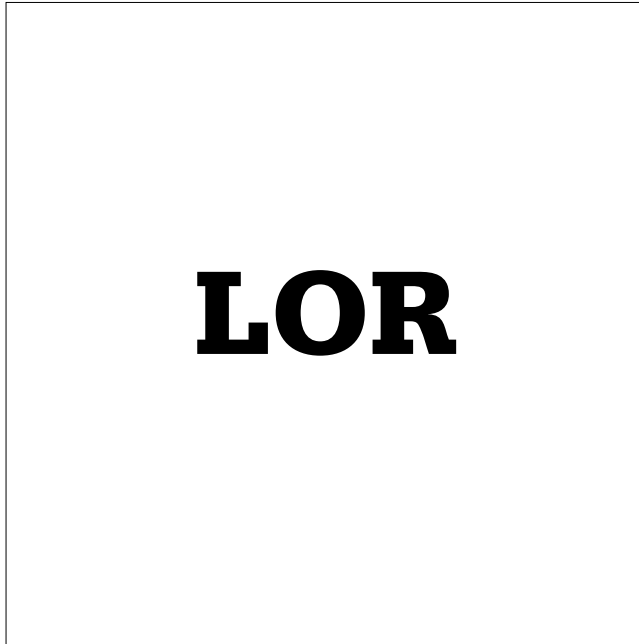
The H2A modules are also equipped with T16 fluorescence light sources (24W, 39W or 54W) which guarantee a **long lifespan**. Achieving the optimum lifespan of fluorescent lamps is favoured by using high-quality pre-switching equipment.

LED



An additional accent light is equipped with High Power LEDs. The High Power LED guarantees particularly **low energy consumption** and a high light yield. Moreover it outclasses a lot of other traditional light bulbs. A LED's energy consumption is substantially lower than that of traditional lamps. The High Power LED's colour offering is also extensive with H2A. The warm white LED gives a more natural, warm radiance and has a colour temperature of 3200K. A cold white LED produces an icy blue, cold light and has a colour temperature of 6000K.

FIXTURE EFFICIENCY



A good fixture yield derives from a good design. This is why particularly extensive attention was paid to the right choice of reflectors and polycarbonate covers when developing the H2A light components. **High yields** are therefore also a logical outcome. After all, everyone is pleased to see low energy bills arrive. Thanks to the increased fixture yields it is possible to meet requirements under the **EN 12464-1 norm** quickly with a minimum installation. The studies on pages 22 and 23 show this.

ISO



Modular is one of the first lighting companies to be awarded the prestigious ISO14001 environmental certificate. This guarantees that the organisation is set up to produce, develop and distribute lighting fixtures according to **environmentally friendly procedures**.

Modular also owns the ISO 9001 certificate.

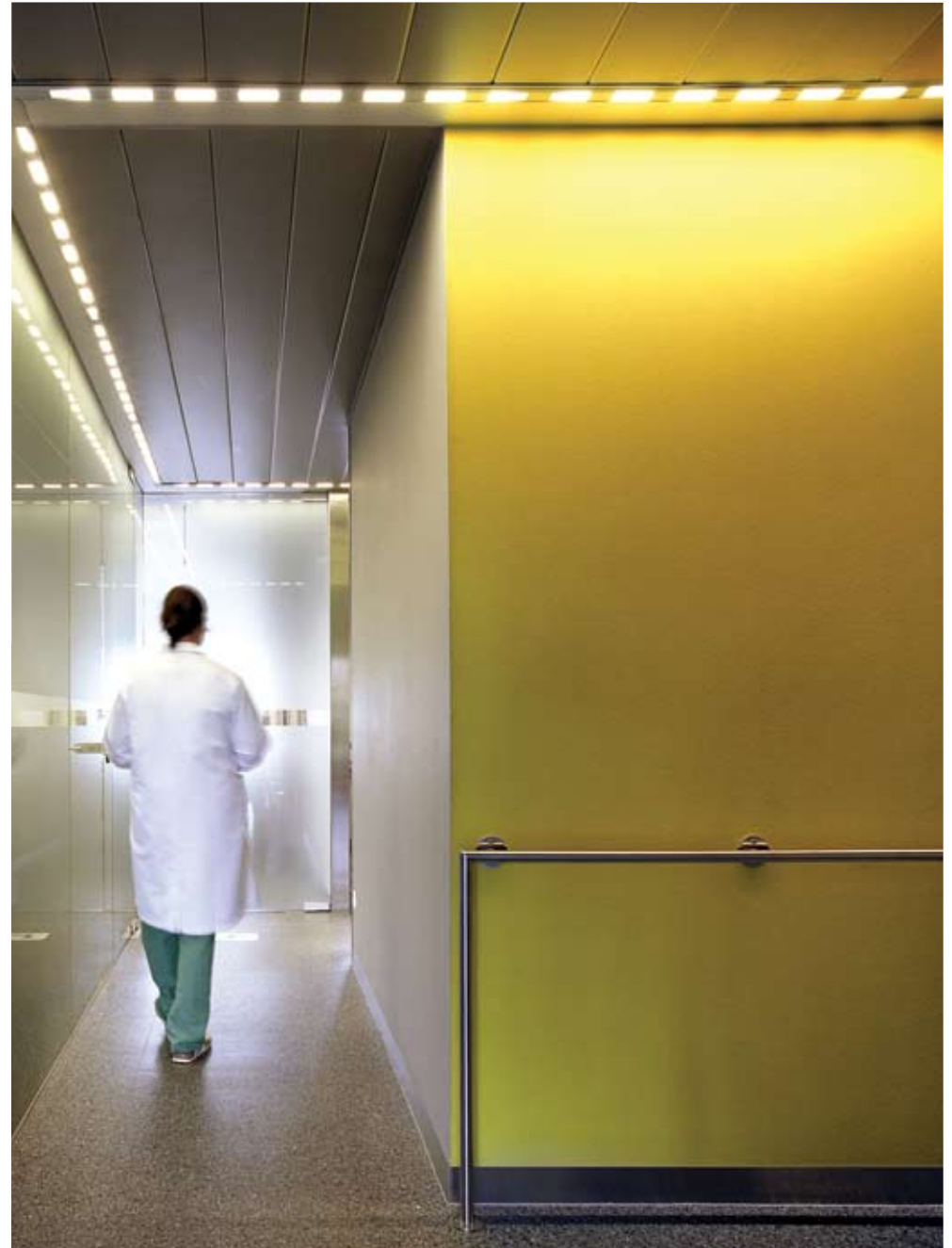


starring: diablo, downnut, square moon, SL 100
architect: Stephan Balcaen
project: AZ, Lokeren, Belgium





starring: diablo, lotis
architect: Stephan Balcaen
project: AZ, Lokeren, Belgium

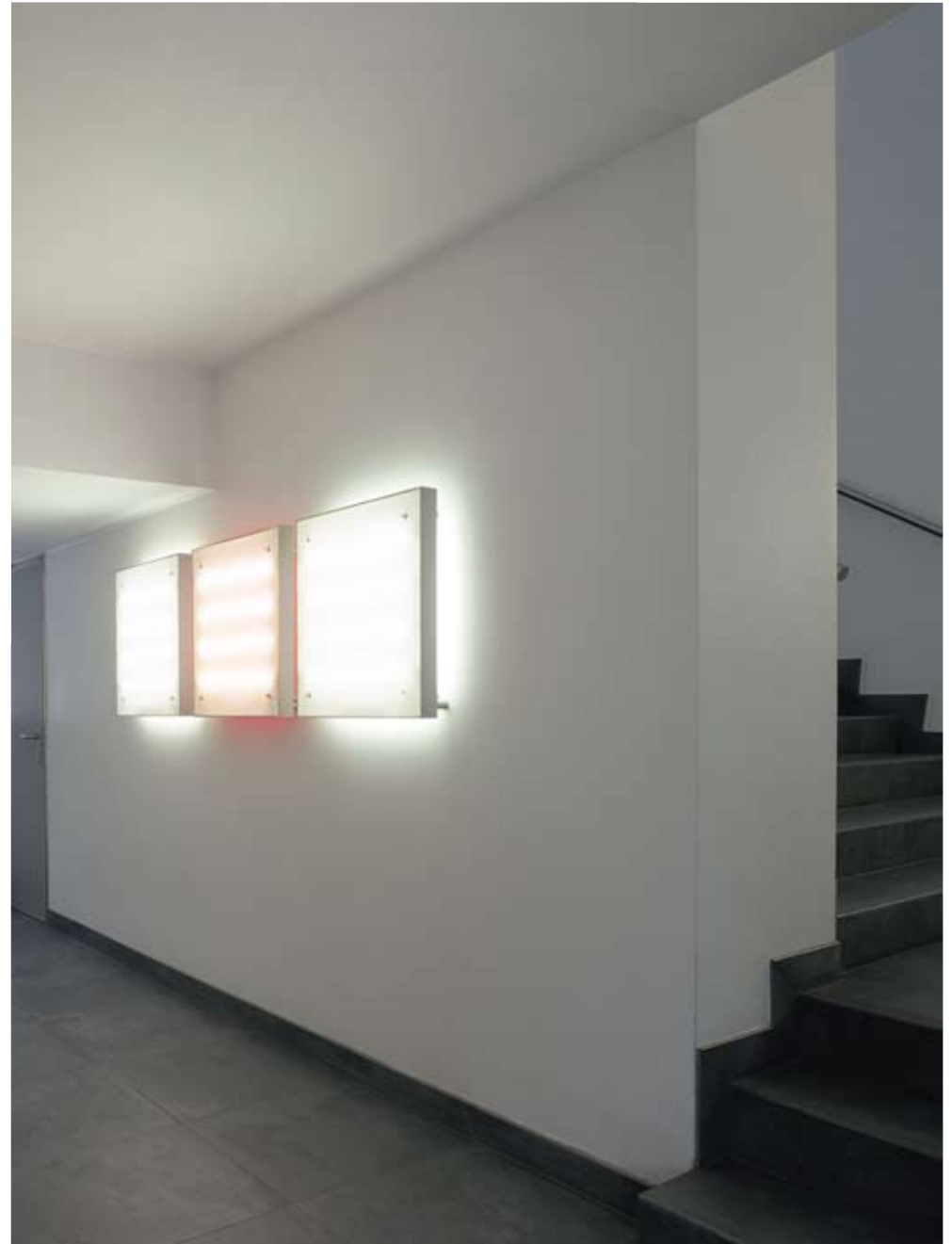




starring: rita, flush gate
architect: Luyten & Lens
project: St. Andries Hospital, Tiel, Belgium



starring: H2A, square moon
architect: Amélie Huybrechts, AZ Sint-Jan AV
project: AZ Sint-Jan AV, Bruges, Belgium





starring: H2A, mini-multiple, ruler
architect: Amélie Huybrechts, AZ Sint-Jan AV
project: AZ Sint-Jan AV, Bruges, Belgium



starring: cake, lotis
architect: Antonio Pinto
project: European Hospital St. Michel, Brussels, Belgium



starring: SL 149
architect: Boeckx & Partners
project: Yperman Hospital, Ypres, Belgium









starring: 45 only
architect: Fabiaan d'Hondt, APZ St. Lucia
project: APZ St. Lucia, Sint-Niklaas, Belgium



starring: 45 only
architect: AVA - Patrice Neirinck
project: CPAS, Brussels, Belgium







starring: baseline, downie (special), square moon
architect: UZ Ghent
project: UZ, Ghent, Belgium





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