



Project LAB QA

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Site 1 - Building 1 - LAB QA

Room 1

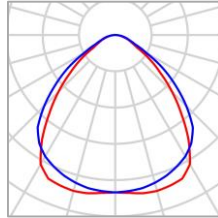
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Luminaire list

Φ_{total}
14571 lm

P_{total}
120.0 W

Luminous efficacy
121.4 lm/W



pcs.	3	P	40.0 W
Manufacturer	3F Filippi S.p.A.	Φ_{Lamp}	4857 lm
Article No.	A5148+A5185	$\Phi_{\text{Luminaire}}$	4857 lm
Article name	KIT LED i3F 76,A3F 91,A3F 93-L1265-2x18W + VS	η	100.00 %
		Luminous efficacy	121.4 lm/W
Fitting	1x LED L - 840	CCT	4000 K
		CRI	80

Product data sheet

3F Filippi S.p.A. - KIT LED i3F 76,A3F 91,A3F 93-L1265-2x18W + VS



Article No.	A5148+A5185
P	40.0 W
Φ_{Lamp}	4857 lm
$\Phi_{Luminaire}$	4857 lm
η	100.00 %
Luminous efficacy	121.4 lm/W
CCT	4000 K
CRI	80

Led retrofit kit suitable for Fluorescent Beta 2x i3F 75, A3F 90 and A3F 92 luminaires.

ILLUMINOTECHNICAL

Luminous efficiency 100% (DLOR 100%, ULOR 0%). Initial luminous flux of the luminaire 4857 lm.

Symmetric distribution.

Installation Interdistance Transv.D = 1.31 x hu - Long.D = 1.31 x hu. Tabular UGR (CIE 117 - 4H-8H; S=0.25H; 70/50/20): RUG 18.5 - 19.8.

Beam angle: 90° - 99°. Luminous efficacy 121 lm/W.

Lifetime (L93/B10): 30000 h. (tq+25°C) Lifetime

(L90/B10): 50000 h. (tq+25°C) Lifetime (L85/B10):

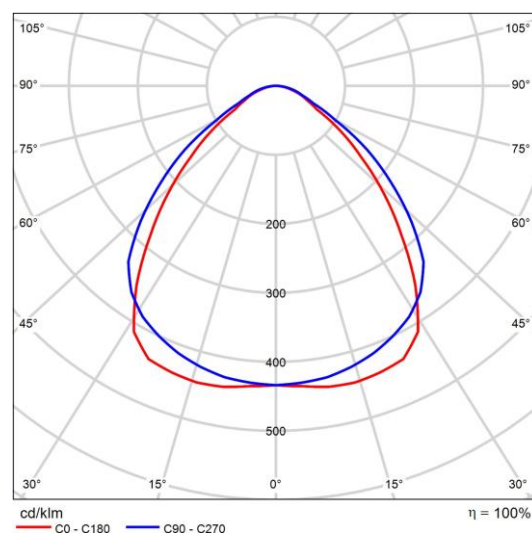
80000 h. (tq+25°C) Lifetime (L80/B10): 100000 h.

(tq+25°C) Lifetime (L85/B10): 50000 h. (tq+35°C)

Sudden decreased luminous flux after 50000 hours: 0% (C0).

Photobiological safety in compliance with IEC/TR 62778: RGO risk exempt, (IEC 62471).

In compliance with IEC/EN 62722-2-1 - IEC/EN 62717 standards.



Polar LDC

Glare evaluation according to UGR												
p Ceiling		70	70	50	50	30	70	70	50	50	30	
p Walls		50	30	50	30	30	50	30	50	30	30	
p Floor		20	20	20	20	20	20	20	20	20	20	
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	16.9	18.1	17.2	18.3	18.5	18.3	19.5	18.6	19.7	19.9	
	3H	17.4	18.4	17.7	18.7	19.0	18.7	19.8	19.0	20.0	20.3	
	4H	17.6	18.6	17.9	18.9	19.1	18.9	19.9	19.3	20.2	20.5	
	6H	17.8	18.7	18.1	19.0	19.3	19.1	20.0	19.4	20.3	20.6	
	8H	17.8	18.7	18.2	19.0	19.3	19.2	20.0	19.5	20.4	20.7	
4H	12H	17.8	18.7	18.2	19.0	19.3	19.2	20.1	19.6	20.4	20.7	
	2H	17.2	18.2	17.5	18.5	18.7	18.4	19.4	18.7	19.7	19.9	
	3H	17.9	18.7	18.2	19.0	19.3	19.0	19.8	19.4	20.1	20.5	
	4H	18.2	18.9	18.6	19.3	19.6	19.3	20.1	19.7	20.4	20.8	
	6H	18.4	19.1	18.8	19.5	19.9	19.6	20.3	20.0	20.6	21.0	
8H	8H	18.5	19.1	18.9	19.5	19.9	19.7	20.3	20.2	20.7	21.1	
	12H	18.6	19.1	19.0	19.5	19.9	19.8	20.4	20.2	20.8	21.2	
	4H	18.3	18.9	18.7	19.3	19.7	19.4	20.0	19.8	20.4	20.8	
	6H	18.7	19.2	19.2	19.6	20.1	19.8	20.3	20.3	20.7	21.2	
	8H	18.8	19.3	19.3	19.7	20.2	20.0	20.4	20.5	20.9	21.3	
12H	12H	18.9	19.3	19.4	19.8	20.3	20.1	20.5	20.6	21.0	21.5	
	4H	18.3	18.9	18.8	19.3	19.7	19.4	19.9	19.8	20.3	20.8	
	6H	18.7	19.2	19.2	19.6	20.1	19.8	20.2	20.3	20.7	21.2	
	8H	18.9	19.3	19.4	19.7	20.2	20.0	20.4	20.5	20.9	21.4	
	12H	18.9	19.3	19.4	19.7	20.2	20.0	20.4	20.5	20.9	21.4	
Variation of the observer position for the luminaire distances S												
S = 1.0H		+0.5 / -0.6					+0.4 / -0.4					
S = 1.5H		+1.0 / -1.6					+0.8 / -1.4					
S = 2.0H		+1.9 / -2.1					+1.8 / -2.2					
Standard table		BK03					BK03					
Correction summand		1.0					2.3					
Corrected glare indices referring to 4857lm Total luminous flux												

Product data sheet

3FFilippiS.p.A.-KITLEDi3F76,A3F91,A3F93-L1265-2x18W+VS

SOURCE

2 linearLEDmodules18W/840.
Energyefficiencyclass(UE2019/2020-UE2019/2015):D. CIE13.3Colourrendering
index:CRI>80(R9<50%).
IESTM-30FidelityIndex:Rf=84Rg=95. CCTnominalcolour
temperature4000K. Colourinitialtolerance(MacAdam):SDCM
3.

MECHANICAL

Gear-trayunitinhot-galvanisedsteel,paintedinwhitepolyester, fixedtothehousingbymeansof"Ribloc"
rapiddevicesingalvanised steel,hingedopening.
Luminairewithlimitedsurface temperature. -D-(EN60598-2-24) Dimensions:1265x235mm,
height105mm.Weight5.233kg.
Glow-wire test resistance 850°C.

ELECTRICAL

Halogen Free electronic wiring 230V-50/60Hz, power factor 0.95, THD
<25%, constant output current, SELV, class I, 1 driver. Power of the luminaire 40W.
CE-IEC60598-1-EN60598-1.
SAFE FLICKER: PstLM=<1 and SVM=<0.4 (IECTR61547-1 and IECTR
63158), to ensure more comfortable and safe light.
Luminaire compliant with EN60598-2-22 for power supply from a centralised emergency
system CPSS (Central Power Supply System), not incorporated in the luminaire-high risk areas
excluded. The default power and flux are 100% in AC and 100% in DC.
Ambient temperature from -20°C to +35°C. Temperature
class T6 max 85°C.
Relative humidity UR: <85%.

INSTALLATION

Retrofit.
Correct installation of the retrofit LED kit, compliant with EN60598-1 and CE marked, inside the 3FFilippi-
Beta2xi3F76,A3F91 and A3F 93 Fluorescent luminaires must be only carried out by qualified
personnel to ensure compliance with the national installation standards.
Attention: to maintain the degree of protection of the device and for the purposes of validity of the
guarantee of the new retrofit kits, it is imperative to replace the old cable guides (on the body of the device)
with the new ones supplied.
All accessories dedicated to this product are available on the Catalog and on our website www.3F-Filippi.com.

ACCESSORIES

A5185-Printed glass Beta2xi3F76-L1265. WARNING

Product data sheet

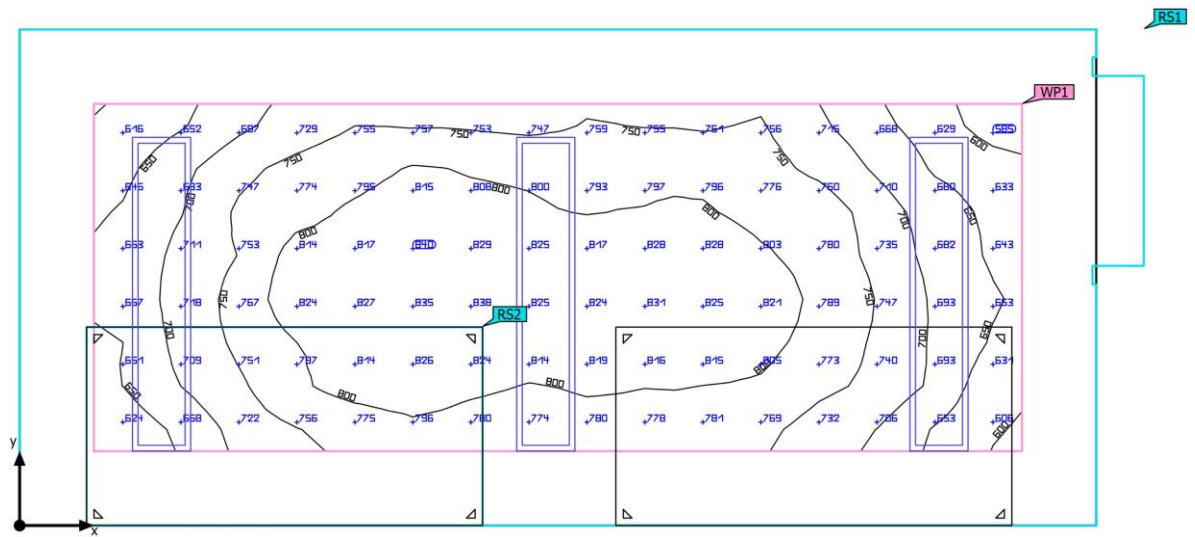
3FFilippiS.p.A.-KITLEDi3F76,A3F91,A3F93-L1265-2x18W+VS

Fixture not suitable for cold stores with an ambient temperature $< 0^{\circ}\text{C}$ and/or relative humidity $> 85\%$.

Luminaire designed for disposal/recycling at end-of-life. Replaceable (LED only) light source by a professional. Replaceable control gear by a professional.

Building1·LABQA·Room1(Lightscene1)

Summary



Ground area	8.70m ²	Clearance height	3.000m
Reflection factors	Ceiling:70.0%, Walls: 50.0%, Floor:20.0%	Mounting height	3.082m–3.105m
Maintenance factor	0.80(fixed)	Height working plane	0.800m
		Wall zone working plane	0.300m

Building1-LABQA-Room1(Lightscene1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	752lx	$\geq 500\text{lx}$	✓	WP1
	$U_o(g_1)$	0.76	≥ 0.60	✓	WP1
	Lighting power density	22.86W/m ²	–		
		3.04W/m ² /100lx	–		
Glare valuation ⁽¹⁾	$R_{UG,max}$	18	≤ 19	✓	
Energy estimation ⁽²⁾	Consumption	[187.14-297.00]kWh/a	max.350kWh/a	✓	
Room	Lighting power density	13.79W/m ²	–		
		1.84W/m ² /100lx	–		

(1) Based on a rectangular space of 4.350mx2.000mand SHRo of 0.25.

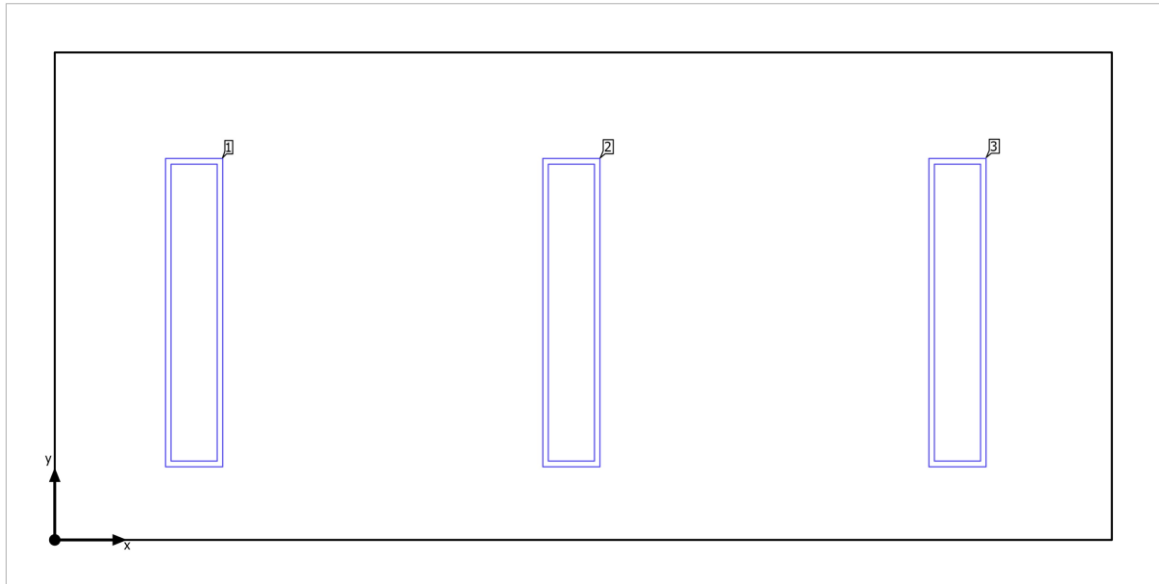
(2) Calculated using DIN:18599-4.

Utilisation profile: DIALux presetting (34.2 Standard (office))

Luminaire list

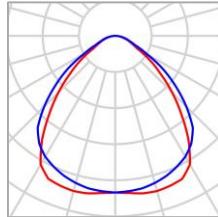
pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
3	3FFilippi S.p.A.	A5148 +A5185	KIT LED i3F76,A3F91,A3F93-L1265-2x18W+VS	18	40.0W	4857lm	121.4lm/W

Building 1 · LAB QA · Room 1
Luminaire layout plan



Building 1 · LAB QA · Room 1

Luminaire layout plan



Manufacturer	3F Filippi S.p.A.	P	40.0 W
Article No.	A5148+A5185	$\Phi_{\text{Luminaire}}$	4857 lm
Article name	KIT LED i3F 76,A3F 91,A3F 93-L1265-2x18W + VS		
Fitting	1x LED L - 840		

Individual luminaires

X	Y	Mounting height	Luminaire
0.573 m	0.933 m	3.105 m	1
2.126 m	0.933 m	3.105 m	2
3.715 m	0.933 m	3.082 m	3

Building 1 · LAB QA · Room 1

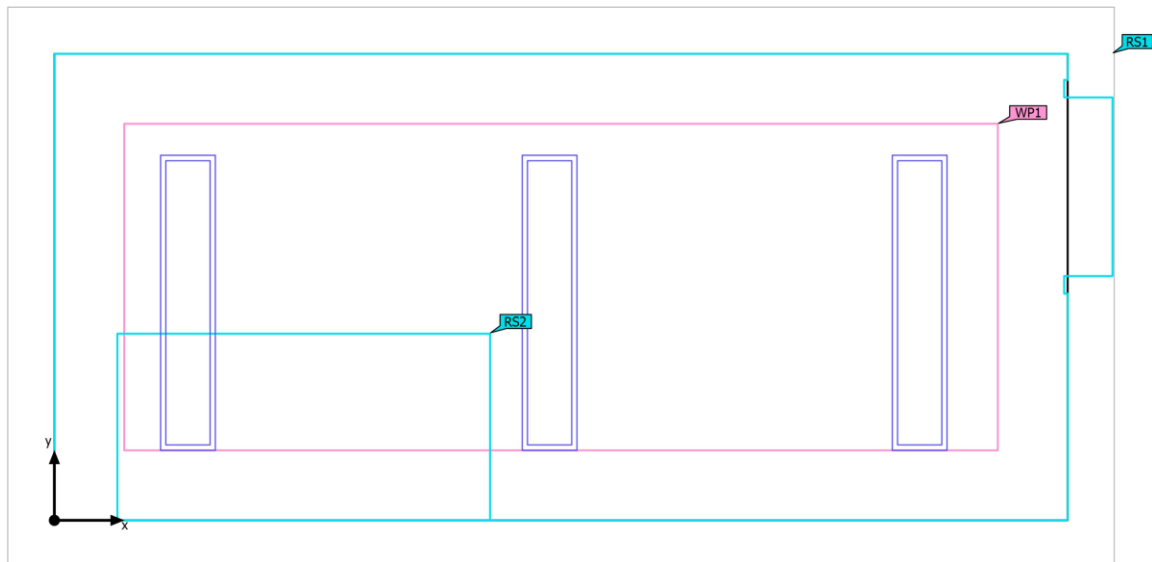
Luminaire list

Φ_{total} 14571 lm	P_{total} 120.0 W	Luminous efficacy 121.4 lm/W
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pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
3	3F Filippi S.p.A.	A5148 +A5185	KIT LED i3F 76,A3F 91,A3F 93-L1265-2x18W + VS	40.0 W	4857 lm	121.4 lm/W

Building 1 · LAB QA · Room 1 (Light scene 1)

Calculation objects



Building1·LABQA·Room1(Lightscene1)

Calculation objects

Workingplanes

Properties	\bar{E} (Target)	E_{\min}	E_{\max}	$U_o(g_1)$ (Target)	g_2	Index
Workingplane(Room1) Perpendicular illuminance(adaptive) Height:0.800m,Wallzone:0.300m	752lx (≥500lx) ✓	569lx	839lx	0.76 (≥0.60) ✓	0.68	WP1

Surfaceresultobjects

Properties	\emptyset	min	max	$U_o(g_1)$	g_2	Index
Surface result object 1 (Floor/ceiling) Perpendicular illuminance (adaptive) Height:0.000m	370lx	60.7lx	592lx	0.16	0.10	RS1
Surfaceresultobject1(Floor/ceiling) Luminance Height:0.000m	23.6cd/m ²	3.87cd/m ²	37.7cd/m ²	0.16	0.10	RS1
Surface result object 2 (Furniture) Perpendicular illuminance(adaptive) Height:0.720m	701lx	544lx	813lx	0.78	0.67	RS2
Surfaceresultobject2(Furniture) Luminance Height:0.720m	112cd/m ²	86.5cd/m ²	129cd/m ²	0.77	0.67	RS2

Utilisation profile: DIALux presetting (34.2 Standard (office))

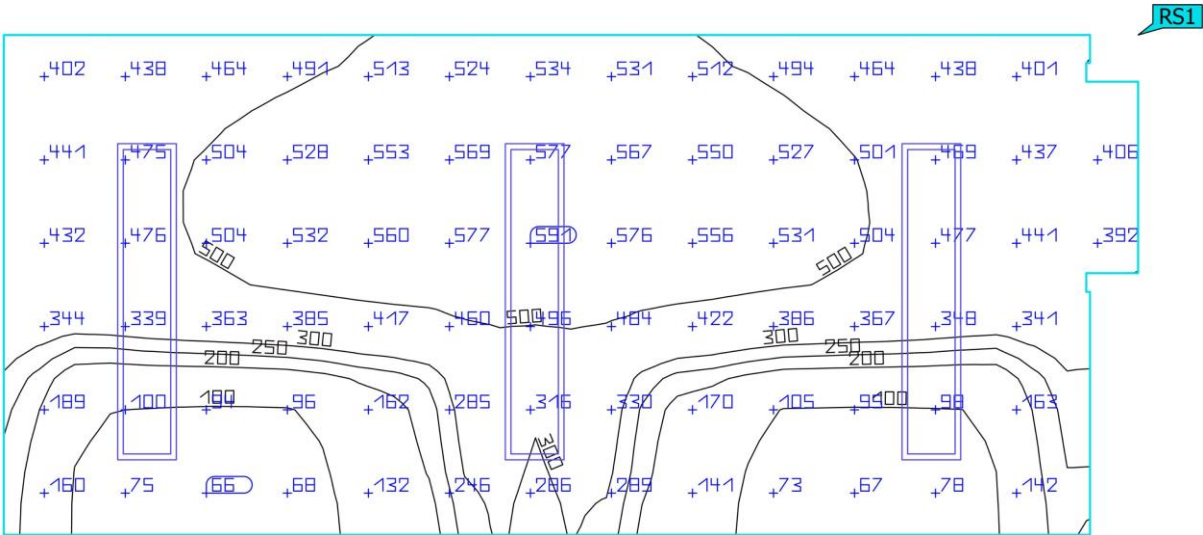
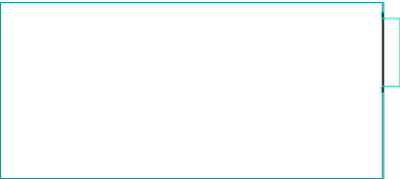
Building1-LABQA-Room1(Lightscene1)
Working plane (Room 1)



Properties	\bar{E} (Target)	E_{min}	E_{max}	$U_o(g_1)$ (Target)	g_2	Index
Workingplane(Room1)	752lx	569lx	839lx	0.76	0.68	WP1
Perpendicular illuminance(adaptive) Height:0.800m, Wall zone:0.300m	(≥500lx) ✓			(≥0.60) ✓		

Utilisation profile: DIALux presetting (34.2 Standard (office))

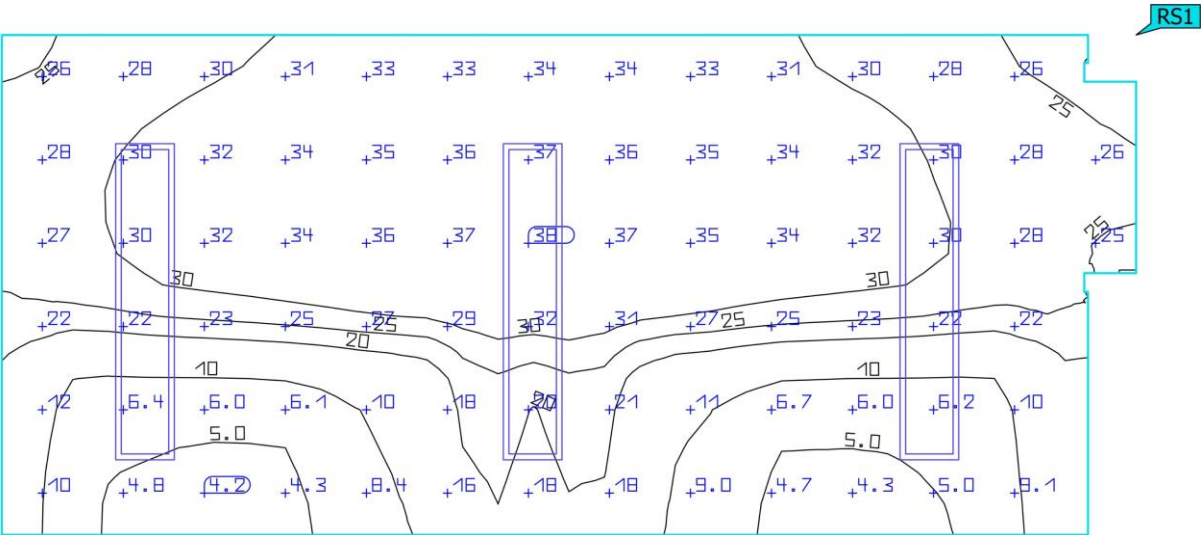
Building1·LABQA·Room1(Lightscene1)
Surface result object 1 (Floor/ceiling)



Properties	\bar{E}	E_{min}	E_{max}	$U_o(g_1)$	g_2	Index
Surface result object 1 (Floor/ceiling) Perpendicular illuminance (adaptive) Height: 0.000m	370lx	60.7lx	592lx	0.16	0.10	RS1

Utilisation profile: DIALux presetting (34.2 Standard (office))

Building1·LABQA·Room1(Lightscene1)
Surface result object 1 (Floor/ceiling)

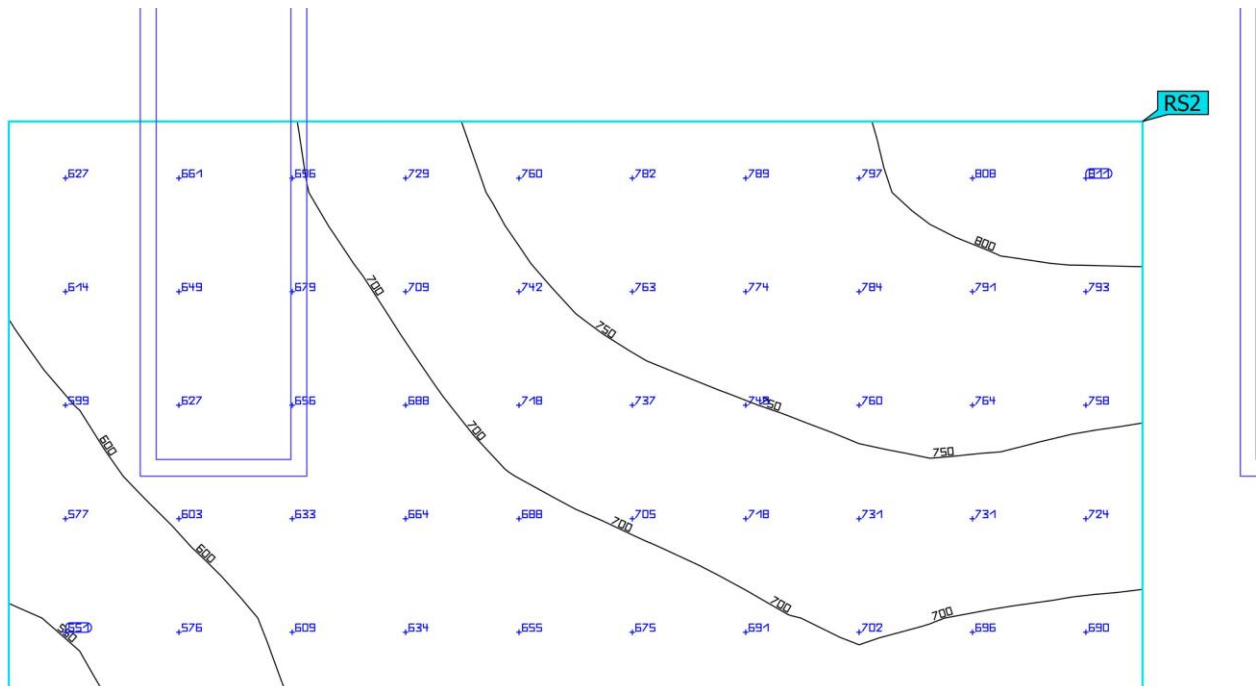


Properties	Ø	min	max	U _o (g ₁)	g ₂	Index
Surfaceresultobject1(Floor/ceiling) Luminance Height:0.000m	23.6cd/m²	3.87cd/m²	37.7cd/m²	0.16	0.10	RS1

Utilisation profile: DIALux presetting (34.2 Standard (office))

Building1·LABQA·Room1(Lightscene1)

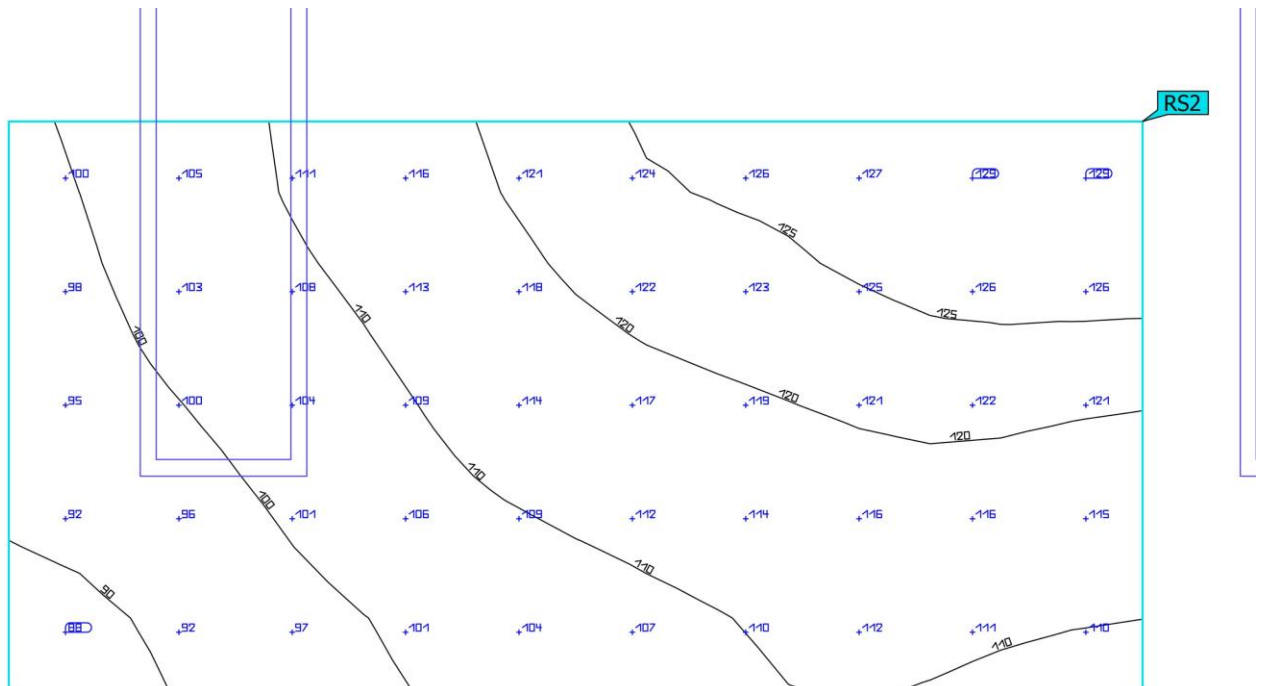
Surface result object 2 (Furniture)



Properties	\bar{E}	E_{min}	E_{max}	$U_o(g_1)$	g_2	Index
Surfaceresultobject2(Furniture) Perpendicularilluminance (adaptive) Height:0.720m	701lx	544lx	813lx	0.78	0.67	RS2

Utilisation profile: DIALux presetting (34.2 Standard (office))

Surface result object 2 (Furniture)



Utilisation profile: DIALux presetting (34.2 Standard (office))

Glossary

A

A	Formula symbol for a surface in the geometry
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B

Background area	The background area borders the direct ambient area according to DIN EN 12464-1 and reaches up to the borders of the room. In larger rooms, the background area is at least 3 m wide. It is located horizontally at floor level.
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C

CCT	<p>(Engl. correlated colour temperature) Body temperature of a thermal radiator which serves to describe its light colour. Unit: Kelvin [K]. The lesser the numerical value the redder; the greater the numerical value the bluer the light colour. The colour temperature of gas-discharge lamps and semi-conductors are termed "correlated colour temperature" in contrast to the colour temperature of thermal radiators.</p> <p>Allocation of the light colour to the colour temperature ranges acc. to EN 12464-1: Light colour - colour temperature [K] warm white (ww) < 3,300 K neutral white (nw) ≥ 3,300 – 5,300 K daylight white (dw) > 5,300 K</p>
Clearance height	The designation for the distance between upper edge of the floor and bottom edge of the ceiling (in the completely furnished status of room).
Control group	A group of luminaires that are dimmed and controlled together. For each lighting scene, a control group provides its own dimming value. All luminaires within a control group share this dimming value. The control groups with their luminaires are automatically determined by DIALux on the basis of the created light scenes and their luminaire groups.
CRI	<p>(Engl. colour rendering index) Designation for the colour rendering index of a luminaire or a lamp acc. to DIN 6169: 1976 or CIE 13.3:1995.</p> <p>The general colour rendering index Ra (or CRI) is a dimensionless figure that describes the quality of a white light source in regards to its similarity with the emission spectra of defined 8 test colours (see DIN 6169 or CIE 1974) to a reference light source.</p>

Glossary

D

Daylight autonomy	Describes what percentage of the daily working time the required illuminance is met by daylight. The nominal illuminance is used from the room profile, unlike described in EN 17037. The calculation is not done in the centre of the room but at the placed sensor measuring point. A room is considered sufficiently supplied with daylight if it achieves at least 50% daylight autonomy.
Daylight factor	Ratio of the illuminance achieved solely by daylight incidence at a point in the inside to the horizontal illuminance in the outer area under an unobstructed sky. Formula symbol: D (Engl. daylight factor) Unit: %
Daylight quotient effective area	A calculation surface within which the daylight quotient is calculated.

E

Energy evaluation	<p>Based on an hourly calculation procedure for daylight in indoor spaces, considering the project geometry and any existing daylight control systems. Orientation and location of the project area are also considered. The calculation uses the specified system power of the luminaires to determine the energy demand. A linear relationship between power and luminous flux in the dimmed state is assumed for daylight-controlled luminaires. Times of use and nominal illuminance are determined from the usage profiles of the spaces. Switched-on luminaires that are explicitly excluded from control also consider the specified times-of-use. The daylight control systems use a simplified control logic that closest them to an outdoor horizontal illuminance of 27,500 lx.</p> <p>The calendar year 2022 is used as a reference only. It is not a simulation of this year. The reference year is only used to assign the days of the week to the calculated results. The change over to summertime is not considered. The reference sky type used is the average sky described in CIE 110 without direct sunlight.</p> <p>The method was developed together with the Fraunhofer Institute for Building Physics and is available for review by the Joint Working Group 1 ISO TC 274 as an extension of the previous annual regression-based method.</p>
Eta (η)	<p>(light output ratio) The light output ratio describes what percentage of the luminous flux of a free radiating lamp (or LED module) is emitted by the luminaire when installed.</p> <p>Unit: %</p>

Glossary

G

g_1	Often also U_o (Engl. overall uniformity) Designates the overall uniformity of the illuminance on a surface. It is the quotient from E_{min} to \bar{E} and is required, for instance, in standards for illumination of workstations.
g_2	Actually it designates the "non-uniformity" of the illuminance on a surface. It is the quotient of E_{min} to E_{max} and is generally only relevant for certifying the emergency lighting acc. to EN 1838.

I

Illuminance	Describes the ratio of the luminous flux that strikes a certain surface to the size of this surface ($lm/m^2 = lx$). The illuminance is not tied to an object surface. It can be determined anywhere in space (inside or outside). The illuminance is not a product feature because it is a recipient value. Luxometers are used for measuring. Unit: Lux Abbreviation: lx Formula symbol: E
Illuminance, adaptive	For the determining of the middle adaptive illuminance on a surface, this is rastered "adaptively". In the area of large illuminance differences within the surface, the raster is subdivided finer; within lesser differences, a rougher classification is made.
Illuminance, horizontal	Illuminance that is calculated or measured on a horizontal (level) surface (this can be for example a table top or the floor). The horizontal illuminance is usually identified by the formula letter E_h .
Illuminance, perpendicular	Illuminance that is calculated or measured plumb-vertical to a surface. This needs to be taken into account for tilted surfaces. If the surface is horizontal or vertical, then there is no difference between the perpendicular and the horizontal or vertical illuminance.
Illuminance, vertical	Illuminance that is calculated or measured on a vertical surface (this can be for example the front of some shelves). The vertical illuminance is usually identified by the formula letter E_v .

L

LENI	(Engl. lighting energy numeric indicator) Lighting energy numeric indicator acc. to EN 15193 Unit: $kWh/(m^2 * a)$
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Glossary

LLMF	<p>(Engl. lamp lumen maintenance factor)/acc. to CIE 97: 2005</p> <p>Lamp flux maintenance factor that takes the luminous flux reduction into account of a luminaire or an LED module in the course of the operating time. The lamp flux maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no luminous flux reduction existing).</p>
LMF	<p>(Engl. luminaire maintenance factor)/acc. to CIE 97: 2005</p> <p>Luminaire maintenance factor that takes the soiling into account of the luminaire in the course of the operating time. The luminaire maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).</p>
LSF	<p>(Engl. lamp survival factor)/acc. to CIE 97: 2005</p> <p>Lamp survival factor that takes the total failure into account of a luminaire in the course of the operating time. The lamp survival factor is specified as a decimal digit and can have a maximum value of 1 (no failures existing within the time concerned or prompt replacement after the failure).</p>
Luminance	<p>Dimension for the "brightness impression" that the human eye has of a surface. The surface itself can emit light thereby or light striking it can be reflected (emitter value). It is the only photometric value that the human eye can perceive.</p> <p>Unit: Candela per square metre Abbreviation: cd/m^2 Formula symbol: L</p>
Luminous efficacy	<p>Ratio of the emitted luminous flux Φ [lm] to the absorbed electrical power P [W] Unit: lm/W.</p> <p>This ratio can be formed for the lamp or LED module (lamp or module light output), the lamp or module with control gear (system light output) and the complete luminaire (luminaire light output).</p>
Luminous flux	<p>Dimension for the total light output that is emitted from one light source in all directions. It is thus an "emitter value" that specifies the entire emitting output. The luminous flux of a light source can only be determined in a laboratory. A difference is made between the lamp or LED module luminous flux and the luminaire luminous flux.</p> <p>Unit: Lumen Abbreviation: lm Formula symbol: Φ</p>
Luminous intensity	<p>Describes the intensity of the light in a certain direction (emitter value). The luminous intensity is a matter of the luminous flux Φ that is emitted in a certain spherical angle Ω. The radiation characteristics of a light source are presented graphically in a light distribution curve (LDC). The luminous intensity is an SI base unit.</p> <p>Unit: Candela Abbreviation: cd Formula symbol: I</p>

Glossary

M

Maintenance factor	See MF
MF	<p>(Engl. maintenance factor)/acc. to CIE 97: 2005</p> <p>Maintenance factor as decimal number between 0 and 1 that describes the ratio of the new value of a photometric planning parameter (e.g. of the illuminance) to a maintenance value after a certain time. The maintenance factor takes into account the soiling of luminaires and rooms as well as the luminous flux reduction and the failure of light sources.</p> <p>The maintenance factor is taken into account either overall or determined in detail acc. to CIE 97: 2005 by the formula $RMF \times LMF \times LLMF \times LSF$.</p>

P

P	<p>(Engl. power)</p> <p>Electric power consumption</p> <p>Unit: watt</p> <p>Abbreviation: W</p>
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R

$R_{(UG)} \max$	<p>Measure of the psychological glare in indoor spaces.</p> <p>In addition to the luminance of luminaires, the level of the $R_{(UG)}$ value also depends on the observer position, the viewing direction and the ambient luminance. The calculation is made according to the table method, see CIE 117. Among other things, EN 12464-1:2021 specifies maximum permissible $R_{(UG)}$-values $R_{(UGL)}$ for various indoor workplaces.</p>
Reflection factor	The reflection factor of a surface describes how much of the striking light is reflected back. The reflection factor is defined by the colour of the surface.
RMF	<p>(Engl. room maintenance factor)/acc. to CIE 97: 2005</p> <p>Room maintenance factor that takes the soiling into account of the space encompassing surfaces in the course of the operating time. The room maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).</p>

S

Surrounding area	The ambient area directly borders the area of the visual task and should be planned with a width of at least 0.5 m according to DIN EN 12464-1. It is at the same height as the area of the visual task.
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Glossary

U

UGR (max)	(unified glare rating) Measure for the psychological glare effect in interiors. In addition to luminaire luminance, the UGR value also depends on the position of the observer, the viewing direction and the ambient luminance. Among other things, EN 12464-1 specifies maximum permissible UGR values for various indoor workplaces.
UGR observer	Calculation point in the room, for the DIALux the UGR value is determined. The location and height of the calculation point should correspond to the typical observer position (position and eye level of the user).

V

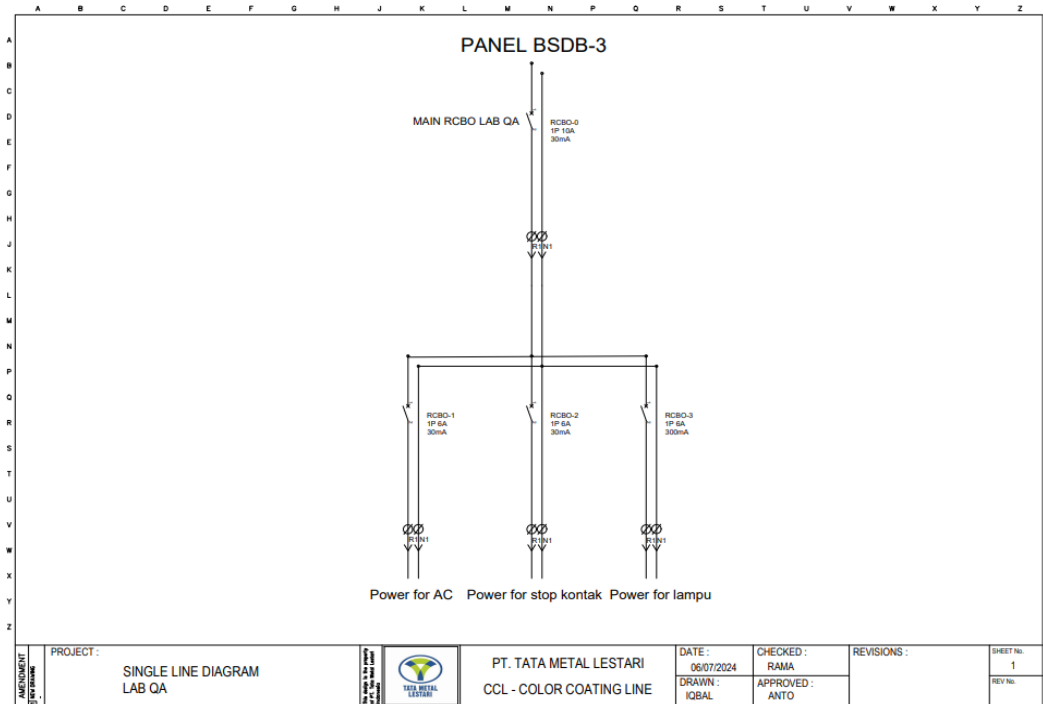
Visual task area	The area that is needed for carrying out the visual task in accordance with DIN EN 12464 -1. The height corresponds with the height at which the visual task is executed.
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W

Wall zone	Circumferential area between working plane and walls which is not taken into account for the calculation.
Working plane	Virtual measuring or calculation surface at the height of the visual task that generally follows the room geometry. The working plane may also feature a wall zone.

WO- Instalasi Listrik LAB QA

1. Diagram One Line LAB QA



2. Aktual instalasi LAB QA (DONE)

- Before



- After

