

# THORN



## Elevation

Restyled recessed fluorescent luminaire with greater performance, efficiency and practicality





Whether in an office, conference room or learning space, face to face communication between people is the prime method of sending and receiving information.

For this reason, Elevation provides a broad light distribution, allowing good quality facial illumination and modelling to ensure the message is received clearly.

Elevation is also one of the highest performing, most efficient recessed luminaires of its kind on the market, exceeding the requirements of the very latest regulations. Introduced to replace Elevation Premier, Elevation provides updated styling for a more contemporary look and feel.





**With a choice of two optics, dependent on the aesthetic requirement and photometric targets, the Elevation range offers real flexibility.**



Choose the DSB louver optic for outstanding performance and high efficiency



Choose the MPT solid optic for a modern look with minimal maintenance



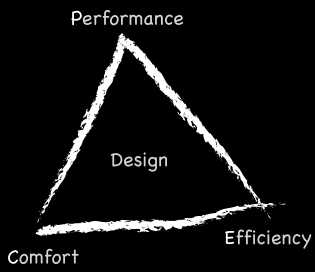
Available with LED emergency. This reduces the number of emergency fittings required, due to the extended coverage compared to fluorescent versions. See page 7 for further information



Available with integral mini sensor. Providing unobtrusive dimming control to save installation time and energy. See page 7 for further information.







At Thorn we recognise our sustainability responsibilities, and with the **PEC** programme we have introduced a wide-ranging philosophy that underpins our approach to lighting design and implementation. The programme is based on the principle that performance, efficiency and comfort determine the visual effectiveness of lighting.

**Performance:** Providing the best visual effectiveness

**Efficiency:** Conserving energy and effort, reducing CO<sub>2</sub> emissions and waste, providing lighting that is practical and efficient to install, operate and maintain

**Comfort:** giving people satisfaction and stimulation

These key attributes are demonstrated throughout this brochure



Successful modern office developments give equal importance to financial, environmental and social concerns whilst new education buildings recognise the benefits in designing interesting and stimulating learning environments. Elevation answers these concerns, by offering high efficiency, good glare control and a balance of direct and indirect light.



### Performance

In modern offices and classrooms many different tasks may be performed, from traditional paper based tasks, to tasks involving computers, whiteboards, pinboards, etc. These require good vertical and horizontal illuminance as well as low disability glare in display screens.

With luminance levels below  $1,500\text{cd/m}^2$  (DSB louvre optic), Elevation helps minimise disability glare in most screen types, and aids user performance.

### Efficiency

The latest environmental legislation means that lighting schemes must reduce energy consumption and minimise the carbon footprint. The more efficient your luminaires, the less power you will use and the easier it will be to meet the latest regulations, whilst saving money at the same time.

The Elevation lumen package ensures you will be compliant for years to come. It has a light output of up to 82% and efficacy of up to 59 luminaire lumens per circuit watt (Llm/w), (in excess of forthcoming guidelines of  $>55$  luminaire Llm/w).

### Comfort

Office workers and students in formal classrooms or lecture halls tend to have a sedentary work routine, looking in the same direction for long periods of time. Poor lighting can lead to headaches and eye-strain, and if people need to sit at an awkward angle to reduce glare, muscle pain can result.

To help reduce discomfort from the lighting, a balance of uplight and downlight can be used that allows good vertical illuminance for a more stimulating environment and good horizontal illuminance to light the task area most effectively.

Elevation gives a good distribution of light within a space, including directing 4% of the light output onto the ceiling, minimising the cave effect and contributing towards an LG7 compliant scheme



Further information can be found within the Thorn Technical Handbook

# Why choose Elevation?

## Exceptional value

Elevation is one of the most efficient luminaires of its kind on the market. With integral sensors for presence /absence and day-light detection, high luminaire lumen packages and long term cost savings through energy reduction, Elevation offers exceptional value for money.

### Exceeding regulatory requirements

At 57 (MPT) and 59 (DSB) luminaire lumens per circuit watt (Llm/w), Elevation is one of the most efficient luminaires of its kind on the market, easily exceeding the 2010 building regulatory requirements (for more information see table below).

### New regulations

The revision to Building Regulations (statutory documents for the construction of buildings), has been recently updated and comes into force in October 2010. Part L2: will set significantly higher efficiency targets for lighting, raising the luminaire efficacy target from 45 to 55 Llm/w for new offices and classrooms. Elevation surpasses this minimum standard, achieving between 57 and 59 Llm/w.

To calculate the efficacy, use the formula below:

$$\text{Total Lamp lumens} \times \text{LOR} / \text{Total Circuit Watts} = \text{Llm/w}$$

Summary of Elevation Efficiency Ratings:	Gear	Circuit Watts/ Luminaire	Lamp Lumens/ Luminaire	LOR	Total Luminaire Lumens/Circuit Watt
2x24 T DSB	HF	48.5	3,500	0.82	59.2
2x24 T5 MPT AC	HF	48.5	3,500	0.80	57.7
1x55 TC-L DSB	HF	61	4,800	0.75	59.0
1x55 TC-L MPT AC	HF	61	4,800	0.74	58.2

DSB - Satinbrite double parabolic louvre, MPT - Micro Prism Technology



### Converting more power into light

The table below illustrates the efficiency of Elevation.

Elevation converts more power into light, and therefore requires fewer fittings to achieve the required average illuminance of 500 lux.

	Elevation 1x55W
<b>Lumen Output</b>	4850
<b>LOR</b>	0.73
<b>Total circuit watts (W)</b>	61
<b>Total Luminaire Lumens/Circuit Watt</b>	59
<b>Burning hours/year (average for classrooms)</b>	1800
<b>Annual consumption kWh</b>	109.8
<b>Carbon emission output based on 0.43 kg/kWh</b>	46
<b>Cost of energy (pounds sterling)</b>	0.09
<b>Yearly cost of energy per fitting (pounds sterling)</b>	9.88
<b>Fittings required to achieve 500lux average illuminance</b>	12
<b>watts per m<sup>2</sup></b>	13
<b>watts per m<sup>2</sup>, per 100 lux</b>	2.6

Based on typical classroom dimensions of 7.8m x 7.1m x 2.8m  
All versions employ DSB louvre optics



### Better results at work

Compared to a standard, modular recessed luminaire, Elevation provides a more stimulating environment to work in, with a good balance of upward and downward light (below). This adheres to LG7 guidelines and minimises the 'cave effect' often associated with modular recessed luminaires (right).



### LED Emergency (E3TX)

Compared to standard fluorescent, LED emergency benefits are as follows:

- Less maintenance with extremely good life
- Less battery material and parasitic power per fitting for improved sustainability
- Extended coverage (about 1.4m further than conventional fluorescent versions), resulting in fewer emergency luminaires required

Minimum illuminance (lux)	Mounting height (m)	Maximum Spacing (m)			
		Centre to End		Between Centres	
		Trans	Axial	Trans	Axial
0.5	2.5	2.55	2.50	8.65	8.60
	3	2.60	2.60	9.15	9.10

LED emergency



Mini sensor



### Indoor Lighting Controls

Did you know that lighting could account for half of all the energy used in office buildings?

Our lighting controls can help you to reduce lighting usage by up to 40%. That could enable you to save as much as 20% off your total electricity bill.

Elevation has a range of lighting control options, including High Frequency Dimmable (HFD) and High Frequency Dimmable with mini sensor DSI (HFL) that maximise your cost-saving potential.

		Daylight detection	Presence detection	Absence detection	Manual dimming	Infra-red control
Sensalite	<b>Rotary-DIM</b>	No	No	No	Yes	No
	<b>SwitchLite</b>	Yes, switching only	Yes	Yes	No	No
	<b>Sensa Digital</b>	Yes, dimming or switching	Yes, dimming or switching	Yes, dimming or switching	Yes via override function	Yes
	<b>Sensa Modular</b>	Yes, dimming and switching	Yes, dimming and switching	Yes, dimming and switching	Yes	Yes
	<b>SensaLink</b>	Yes, dimming and switching	Yes, dimming and switching	Yes, dimming and switching	Yes	Yes

# Photometric data/Schemes

## Scheme 1: Typical Open Plan Office (500 lux)



(based on a room measuring 15m x 15m x 2.8m)

## Scheme 2: Typical Classroom (500 lux)



(based on a room measuring 7.8m x 7.1m x 2.8m)

	Luminaire type	No. of luminaires	Spacing	Illuminance (lx)	Uniformity	wall/work plane	ceiling/work plane	Installed load (W/m <sup>2</sup> )
Office (Scheme 1)	Elevation 1X55W DSB	36	2.4 x 2.4m	532	0.8	0.35	0.22	9.76
Classroom (Scheme 2)	Elevation 1X55W DSB + Optus	9+2	1.8 x 1.8m	507	0.7	0.45	0.23	11.27
Classroom (alt)	Elevation 1X55W DSB	6	3 x 2.4m	300	0.7	0.44	0.22	6.6

### Typical Requirements:

#### Open Plan Office

Office lighting will cover a variety of tasks, from paper based to computer work and face to face meetings. If the layout of the office isn't know at the time of specifying the lighting. Good uniformity is also a requirement, providing a consistent lighting effect and offering flexibility should the office layout change. Furthermore, a balanced ambience creates a pleasant environment in which to work in so a luminaire which creates ceiling and wall washing is preferable. For this reason, the following guidelines are the best practice:

Average illuminance target: 500 lux  
Minimum uniformity target: 0.7

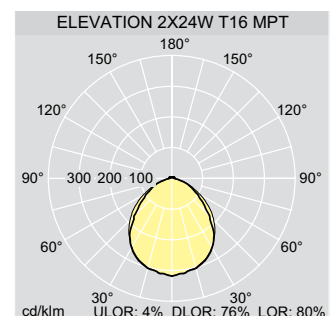
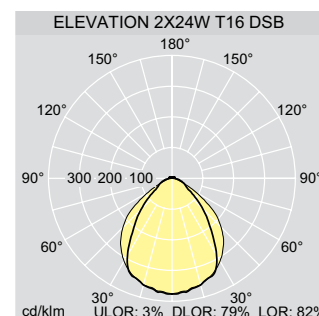
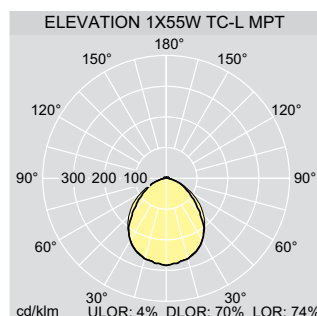
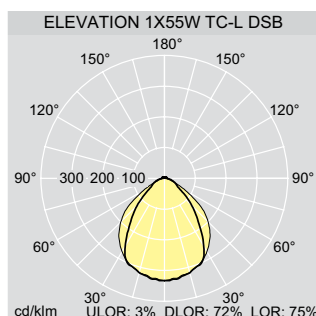
Elevation is able to achieve these targets using 36 luminaires in a typical sized open plan office, with spacing of 2.4m between each luminaire (2.4m between each row)

#### Classroom

Due to the regular use of teaching aids and the importance of facial modelling for teacher/student communication, both the horizontal and vertical illuminance are of paramount importance within the classroom. With 37% of the total working plane illumination on the vertical plane, Elevation achieves both effective illumination of whiteboards and good facial modelling. Furthermore, a classroom which is also required for adult learning will require an average illuminance of 500 lux, however, for this reason the following guidelines are the best practice:

Average illuminance target: 500 lux  
Minimum uniformity target: 0.7

Elevation is able to achieve these targets using 9 luminaires plus 2 whiteboard luminaires, in a typical sized classroom, with spacings of 2.4m between each luminaire. If only 300lux is required, however (no adult learning) Elevation can achieve this target with only 6 luminaires and uniformity 0.7. With 44% of the total working plane illumination on the vertical plane, Elevation achieves both effective illumination of whiteboards and good facial modelling.



(1x55 data achieved by using amalgam lamps)



# Product Features Ordering Guide Dimensions

## Lamps

55W TC-L (FSD) compact fluorescent. Cap: 2G11  
With 840 Amalgam TC-L or 830 standard TC-L lamp options  
24W T16 (FDH) linear fluorescent. Cap: G5  
With 840 or 830 lamp options

## Materials/Finish

Diffuser: perspex frost diffuser and PMMA axial prismatic  
Wings: reeded opal acrylic (AC)  
Louvre: Satinbrite double parabolic aluminium  
Body and reflectors: white painted steel (RAL 9010 closest match)

## Installation/Mounting

Suitable for lay-in (exposed tee 15 and 24mm) suspended ceilings  
Suitable for pull up installation (concealed tee) suspended ceilings using wedge brackets (supplied), fitted externally via adjacent tile opening.  
Wieland electrical connection via panel mounted GST male connector (plug).  
Appropriate female sockets and T connectors to be ordered separately (see accessories ordering guide).  
Provision for gripple wire in the body. Wire to be ordered separately (see accessories ordering guide)

## Standards

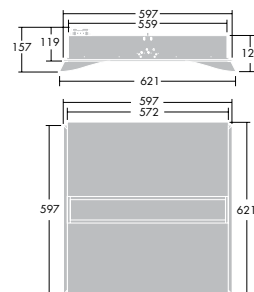
Designed and manufactured to comply with EN 60598  
Emergency EN 60598.22  
Class I Electrical  
IP20  
CE

## Lighting Controls



e-Control is Thorns initiative to increase the use of dimming and lighting control in products and lighting solutions.

The continuing importance of efficient energy use (on both cost and environmental grounds), together with a need for more flexible application of lighting, has led to a reassessment of lighting techniques and given a fresh impetus to the drive for more efficient controls.



## Ordering guide Supplied complete with lamp(s) (840 and 830)

Description	Ilcos Code	Socket	Standard Versions		LED Emergency Versions	
			Weight (kg)	SAP Code	Weight (kg)	SAP Code
<b>High Frequency Versions (HF)</b>						
ELEVAT 1X55 TC-L HF DSB AC WL L840	FSD	2G11	6.3	96239063	6.7	96239069
ELEVAT 1X55 TC-L HF DSB AC WL L830	FSD	2G11	6.3	96239405	6.7	96239429
ELEVAT 2X24 T16 HF DSB AC WL L840	FDH	G5	6.4	96239064	6.8	96239070
ELEVAT 2X24 T16 HF DSB AC WL L830	FDH	G5	6.4	96239406	6.8	96239430
ELEVAT 1X55 TC-L HF MPT AC WL L840	FSD	2G11	6.5	96238999	6.9	96239017
ELEVAT 1X55 TC-L HF MPT AC WL L830	FSD	2G11	6.5	96239407	6.9	96239431
ELEVAT 2X24 T16 HF MPT AC WL L840	FDH	G5	6.6	96239000	7	96239018
ELEVAT 2X24 T16 HF MPT AC WL L830	FDH	G5	6.6	96239408	7	96239432
<b>High Frequency Dimmable Versions (HFD)</b>						
ELEVAT 1X55 TC-L HFD DSB AC WL L840	FSD	2G11	6.5	96239065	6.9	96239071
ELEVAT 1X55 TC-L HFD DSB AC WL L830	FSD	2G11	6.5	96239413	6.9	96239437
ELEVAT 2X24 T16 HFD DSB AC WL L840	FDH	G5	6.6	96239066	7	96239072
ELEVAT 2X24 T16 HFD DSB AC WL L830	FDH	G5	6.6	96239414	7	96239438
ELEVAT 1X55 TC-L HFD MPT AC WL L840	FSD	2G11	6.7	96239005	7.1	96239023
ELEVAT 1X55 TC-L HFD MPT AC WL L830	FSD	2G11	6.7	96239415	7.1	96239439
ELEVAT 2X24 T16 HFD MPT AC WL L840	FDH	G5	6.8	96239006	7.2	96239024
ELEVAT 2X24 T16 HFD MPT AC WL L830	FDH	G5	6.8	96239416	7.2	96239440
<b>High Frequency Mini Sensor Versions (HFL)</b>						
ELEVAT 1X55 TC-L HFL DSB AC WL L840	FSD	2G11	6.6	96239067		
ELEVAT 1X55 TC-L HFL DSB AC WL L830	FSD	2G11	6.6	96239421		
ELEVAT 2X24 T16 HFL DSB AC WL L840	FDH	G5	6.7	96239068		
ELEVAT 2X24 T16 HFL DSB AC WL L830	FDH	G5	6.7	96239422		
ELEVAT 1X55 TC-L HFL MPT AC WL L840	FSD	2G11	6.8	96239011		
ELEVAT 1X55 TC-L HFL MPT AC WL L830	FSD	2G11	6.8	96239423		
ELEVAT 2X24 T16 HFL MPT AC WL L840	FDH	G5	6.9	96239012		
ELEVAT 2X24 T16 HFL MPT AC WL L830	FDH	G5	6.9	96239424		

AC - Acrylic Wings Tp(b), WL4 - Wieland GST 4 pole connector, WL6 - Wieland GST 6 pole connector,  
MPT - Micro Prism Technology, DSB - Satinbrite double parabolic louvre, HF - High Frequency,  
HFD - High Frequency Dimmable DSI, HFL - High Frequency Dimmable with mini sensor DSI

## Accessories Ordering Guide

Description		SAP code
Connect S4	Wieland GST 4 pole socket for connecting HF variants	96200559
Connect S6 B	Wieland GST 6 pole socket for connecting HFD/HFL variants	96233052
Connect T4	Wieland 4 pole T connector for daisy chaining HF luminaires	96200562
Connect EM S3 R (only needed if using Voyager Explorer)	Wieland GST 3 pole socket for connecting E3TX luminaires	96503766
GRIPPLE SAFETY WIRE		96239327

# Installation

## Step by Step Installation Process (pull up installation)



1(a).



1(b).



2. (HFD version shown)



3. (HF version shown)



4(a).



4(b).

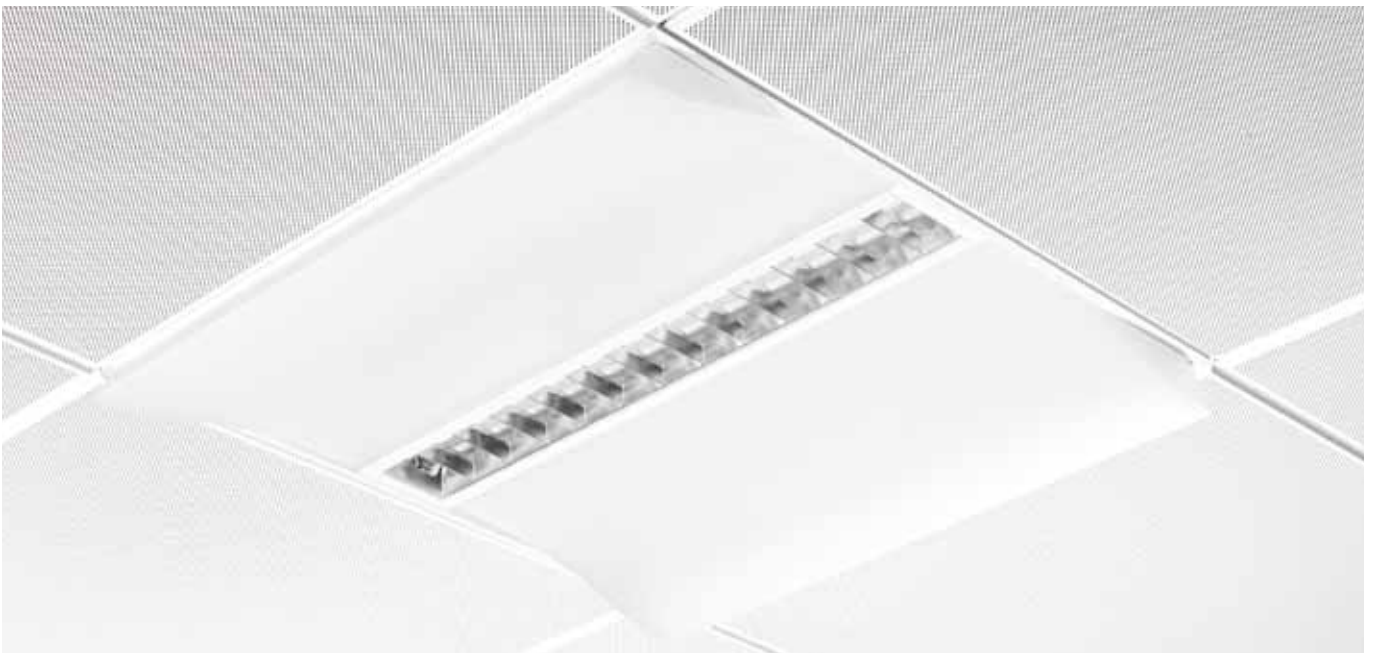


5.

Elevation is quick and intuitive to install with Wieland plug and play connection facility, simple mounting brackets and click and fix components. Follow the simple step by step installation instructions below.

1. Attach mini wedge brackets (x4) from the outside of the body, by removing adjacent ceiling tile
2. Connect Wieland plug with socket located on the back of the luminaire
3. T connector for daisy chaining HF luminaires (if required)
4. Lamps are easily accessed via removable central optic
5. Remove louvre film

Also suitable for lay-in installation, into 15 and 24mm ceiling grid systems. Wings and central optic will need to be removed to allow clearance of the ceiling grid when installing using this method.



## Ceiling compatibility

Elevation is compatible with most suspended ceiling systems. Please refer to the table below for a quick guide to compatibility:

Ceiling Type	Elevation
<b>Exposed Tee Grids</b>	
15mm lay in	A
24mm lay in	A
15mm pull up	B
24mm pull up	B
<b>Concealed Fix Grids</b>	
Armstrong Orcal 1800	D
Armstrong Orcal 3000 Q	C
Armstrong Orcal 3000 S	B
SAS 120	D
SAS 150	C
SAS Alugrid 15/08	B
SAS Alugrid 15/16	B
SAS Alugrid 15/19	B
SAS Alugrid 25/16	B
Burgess Clip in	D
Burgess A Bar	B

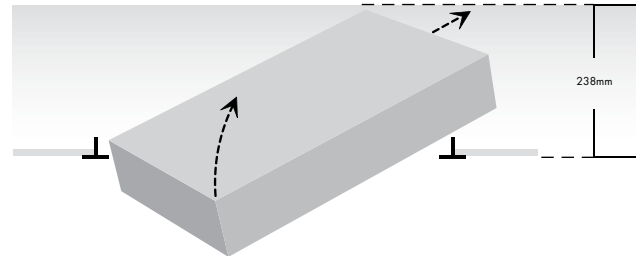
Elevation provides the same ceiling compatibility as the IndiQuattro range. If using wedge brackets for a lay out installation, the suspended ceiling grid height must be between 12mm (minimum) and 68mm (maximum). The table (left) illustrates the suspended ceilings from the 3 main ceiling manufacturers that Elevation is compatible with.

It is always advisable to check ceiling and product dimensions and drawings to ensure compatibility, particularly for non-standard ceilings.

- Key**
- A** Yes - No additional fixings required
  - B** Yes - Mini-wedges required (supplied)
  - C** Yes - But product will sit higher than tile
  - D** Yes - but only if half spring T option available

### Required void depths for recessed fittings

For lay-in installation, the depth of the ceiling void needs to be as follows:



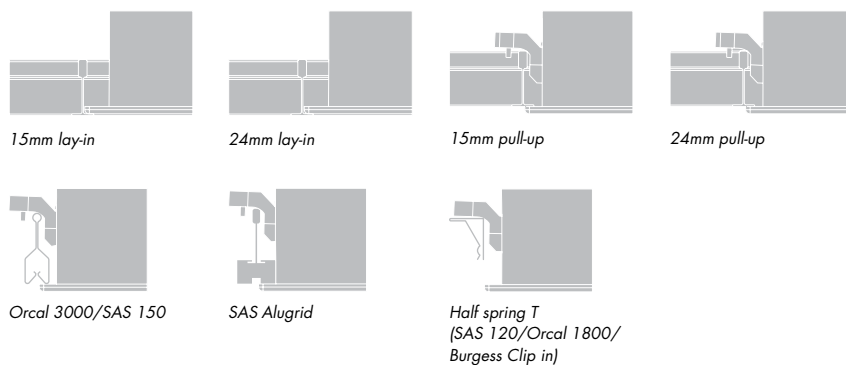
Fitting passed diagonally through ceiling aperture. Ceiling grid intact.



Fitting passed over one 'T' bar with one cross-noggin removed.



Fitting passed over ceiling grid after being inserted through area.





# THORN

Lighting people and places

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