Lighting for Pedestrian Crossings
Identification Visibility Safety
Serious accidents occur on pedestrian crossings every day and cause outrage because crossings are perceived as places of safety where the driver should be able to see pedestrians. But what if the driver genuinely didn’t see the pedestrian until it was too late?

It is true that drivers should drive in a manner that allows them to detect and react to all risks in good time. But despite improvement driven by EU directives and national regulations, and overwhelming public support, statistics show that more action is needed to reduce pedestrian crossing fatalities.

One in three pedestrian fatalities occur within the urban environment, peaking during the early evening and at just after midnight.

Eight thousand accidents happen on pedestrian crossing each year, mostly at night and over 40% of crossings score poorly on visibility at night. (based on 2010 figure, Crossings in the EU, sample size 270).

Furthermore, EU traffic Safety Statistics show that nighttime accidents on crossings account for 51% of the total, even though traffic flow is only one third of daytime levels. To make it worse, nighttime accidents are often more severe and over a third are reported to be due to difficulty in observation by the driver.

Night-time visibility is a significant focus by the Eurotest assessment programme, attracting a 35% weighting to their safety score and of course lighting and warning beacons play an important role in this. It’s the top priority in improving road safety for municipalities.

It’s something authorities can afford to do and serves a valuable purpose.

At Thorn we deliver high performance lighting, optically optimised to give the best possible lighting conditions for pedestrian and driver at road crossing points. You would call it a safe crossing, we call it IVS, Identification Visibility System.

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*The EuroTest ‘Pedestrian Crossing Assessment Programme’ conducted by Europe’s motoring and touring organisations tested 270 crossings between July and September 2010 in 18 major European cities. The study emphasised the need for good lighting at night. Best practices in this field were where lighting systems at zebra crossings showed to be very efficiently focused on the crossing areas, making them clearly visible well in advance to approaching drivers.*

8,000 pedestrians are killed in road accidents in Europe, 1 in 4 on pedestrian crossings. -> Casualties of this magnitude are a serious health and social problem!

Elderly pedestrians and children are particularly vulnerable on pedestrian crossings. -> Pedestrian crossings should be designed to encourage people to use them!

Performance, Efficiency, Comfort
For a better lit environment

Performance: Providing the best visual effectiveness
- Precision optic significantly improves vertical illuminance making pedestrians visible as they cross
- Extreme cut-off for low glare enhances clarity of the lit scene
- Low level flat beam gives good modelling of hazards

Efficiency: Conserving energy and effort, reducing CO₂ emissions and waste, providing lighting that is practical and efficient to install, operate and maintain.
- The luminaire significantly reduces power consumption as the double asymmetric optic enables crossings to be lit more efficiently with minimal obtrusive/waste light
- Easy installation and maintenance from proven products reduce cost of ownership

Comfort: giving people satisfaction and stimulation
- White light with high colour rendering properties creates a reassuring ambience
- Broad choice of luminaire styles unifies the streetscape
- Extra signalling via the flashing LED indicates safe crossing location and enhances safety
With the IVS, system safety is enhanced by the specialist optical system and the use of additional signaling.
Mounting height of the luminaires varies from 4m to 6m, which overcomes the deficiency problems associated with high vehicles in low-level lighting schemes.

IVS is a classic example of the advantage of selecting a light source and optic combination to suit the requirements of a specific application; due to the well controlled beam and restricted elevation of 0° or 5°, area lighting loads and obtrusive (waste) light can be reduced compared to conventional fittings. The reward is a more economical and environmentally sensitive solution. A great balance of performance and efficiency.

Building on the Thorn reputation for good quality, efficiency and reliability, IVS versions of our standard luminaires keeps installation and maintenance impacts to a minimum whilst matching the aesthetic of the road lighting and wider streetscape.

Current road lighting provides no indication of the pedestrian crossing from either the pavement or when already crossing the road. It often fails to identify the actual crossing from any distance or highlight the signs used.

Best practice increases safety by highlighting the pedestrian before crossing, whilst on the crossing and clearly identifying the crossing point using a beacon.

Public lighting near the crossing with a sign either side of the road sometimes with its own lighting, yet, the silhouette of the pedestrian can barely be seen.

A dangerous but unfortunately common example. A lit sign above the crossing containing a crossing light placed exactly above and on the crossing. The road appears illuminated but the pedestrian is hardly visible.

How to do it correctly. The pedestrian crossing is lit with IVS. The light distribution clearly lights the pedestrian without glare to the driver. The flashing beacon draws the drivers attention to the crossing point.
Whatever luminaire design is selected from the IVS portfolio the optical performance for each lamp type is as follows:
Using the same colour temperature lamps: 4000°K

<table>
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<tr>
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<th>IVS LED 2x48W/70</th>
<th>IVS 2 HIT 150 W</th>
<th>Traditional Technique 2 HIT 150 W</th>
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<td>40 - 60</td>
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</tbody>
</table>

**Uave**

- IVS LED: 0.7
- IVS: 0.7
- Traditional Technique: 0.4

**Eave**

- IVS LED: 116lx
- IVS: 121lx
- Traditional Technique: 160lx

**W**

- IVS LED: 220
- IVS: 300
- Traditional Technique: 300

Thanks to its efficient R-PEC® optical system, the new IVS LED ensures an improved uniformity with high illuminance values, all with less than quarter of the energy required by conventional techniques.

Thanks to its purpose made, highly efficient, 150W optic, IVS maintains excellent uniformity and illuminance levels.

Given the same parameters a traditional pedestrian crossing luminaire, with optimised settings, achieves too much illuminance and, more critically, poor uniformity, resulting in unsatisfactory visibility of people within the area.
Using the latest advances in LED technology, the IVS system aims to complement road signal legislation by offering highway authorities an additional safety feature: a rapid flashing indicator accessory to further warn road users to yield sooner when approaching the crossing.

Mounted on the lighting column, separate from the luminaire for better visibility yet beyond the reach of vandals, the knuckle shaped unit consists of two circular amber LEDs aligned horizontally, one on each side. The lights flash at a predetermined rate to achieve optimum driver recognition and operate separately from the lantern, being visible during the day as well as nighttime hours. A further benefit is to attract and encourage pedestrians to cross the road inside the identified zone, where they are more visible.

Together with the selection of lanterns and columns this creates not only the complete pedestrian crossing lighting package from a single, dedicated source of supply, but also an authoritative body of design advice, too.

Lamps

Flashing Node:
6 X 1W LEDs (3 each side)

Materials/Finish

Body: ABS, finished in light grey (RAL 9006) or powder coated texturized, texturized grey (Akzo 900).
diffuser: toughened glass
Screw fixings: stainless steel

Installation/Mounting

Mounting at 1120mm from the top of a conical Ø60 column or Ø76mm cylindrical column with a Ø22mm go through hole (as per Thorn IVS column)
Cable gland for Ø8mm to 13mm cable.
Screw fixings: stainless steel
Delivered ready to install, complete with factory fitted integral gear prewired with 5m of HO7RN-F 2x1 mm² cable all supplied in a single carton.

Standards

Designed and manufactured to comply with EN 60598-2-3
Class II electrical
To 25° (20°/+35°)
IP66: Ingress protection
IK10: Shock resistance

Specification

To specify state:
Warning LED flashing node dedicated to pedestrian crossings.
IP66 and made of vandal resistant material to be installed on the section of the column. To be installed together with Thorn pedestrian crossings luminaire and column packages.
As Thorn IVS Flash node.

Signalling accessory Ordering guide

<table>
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<tr>
<th>Description</th>
<th>Gear</th>
<th>Texturised Grey</th>
<th>Light Grey</th>
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R2L2

Light source
From 12 LED to 180 LED
Lifetime:
100 000 hours B10L70
>100 000 hours B50L90
@Ta25°C
Luminaire efficacy up to
120Lm/W R-PEC
Up to 40 000lm
Color Temperature 4000K
but also 3000K and 5700K
CRI: 70

Materials/Finish
Housing, canopies, spigot:
die-cast aluminium with powder coating
Glass: tempered, 4 mm thick
Screws: EcolubricR treated
Powder coating texturized light grey as standard (close to R9006)
Other RAL or AKZO colors available on request
Other special treatment on request

Installation/Mounting
Post-top mounting: Ø60-76mm
Side-entry mounting: Ø48-60mm
or Ø34-42-48-60mm
Operating temperature:
-25°C < Ta < +35°C
Suitable for use up to +50°C
through the use of heat regulation system
Recommended mounting height:
4m to 14m
Adjustable tilt angle side:
0°/-5°/-10°/-15°
Adjustable tilt angle top:
0°/+5°/+10°

Standards
Specification
To specify state:
Three sizes with extensive optical, lumen and light distribution choice for all road applications up to ME1.
Efficient (up to 100Lm/W) R-PEC optic with 11 light distributions for precise light placement with minimum waste light. Wide range of intelligent lighting control solutions from stand-alone dimming to fully remote control via central monitoring system. Attractive, universal and integrated spigot offering flexibility through top and side entry as well as tilt adjustment up to 15°. Easy to fit back and front louvres which can be fitted retrospectively for extra light control and comfort. As Thorn R2L2

<table>
<thead>
<tr>
<th>Size</th>
<th>Number of LEDs</th>
<th>mA</th>
<th>K</th>
<th>Electrical Class</th>
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R2L2 Small

Max. weight (kg)
10.6 (with gear) 8.6 (without gear)
Max. Scu: 0.06m²

R2L2 Medium

Max. weight (kg)
14.2 (with gear) 11.1 (without gear)
Max. Scu: 0.06m²
CiviTEQ S - Scx: 0.077m²

CiviTEQ L - Scx: 0.115m²

390 133 Ø42/60/76

230 580 160 Ø42/60/76

10

IVS

Product features

Light source
100,000hrs Drivers and LEDs (L90) at Ta25°C
Luminaire efficacy up to 127lm/W
Up to 17,000lm (156W)
Color temperature: 4000K but also 3000K and 5700K
CRI: 70

Materials/Finish
Performance version: Canopy: die-cast aluminium, powder coated grey RAL 9006 (other RAL colours on request) with rear clip in stainless steel. Basic version with canopy in glass reinforced polycarbonate, RAL 9006 with antagalvanic stainless steel screws
Body: die-cast aluminium unpainted
Spigot: plain die-cast aluminium
Enclosure: toughened glass
Screws: stainless steel

Installation/Mounting
CL1: Suitable for mounting on top Ø76mm or side Ø60mm or Ø42mm (Ø60mm delivery with reducer MA34/42mm fitted)
CL2: Suitable for mounting on top Ø76mm or side Ø60mm (Ø34/42mm with accessory 96261772)
Variable tilting setting: 0° to +10° on post top mounting and -20° to 0° on lateral mounting, in 5° steps.
Accessory to set at horizontal 0° the luminaire when retrofitted in side entry onto 45° tilt arm
Cable gland for Ø8 to 12mm cable. Delivered complete and ready to install, all supplied in a single carton

Standards

Specification
To specify state:
Unobtrusive, cost effective road lighting solution featuring R-PEC® and Optibloc® with 12 precise lighting distributions, fully versatile installation possibilities, low maintenance requirements and no need to replace LED driver.
CMS with Radio Frequency and Powerline system, is also compatible with other controls systems. Choice of options and accessories: 10KV, automatic disconnection, BPS, LRT, photocell and external louvres.
As Thorn CiviTEQ.

<table>
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<tr>
<th>Size</th>
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</table>
**Oxane S**

**Light source**
Lifetime hours: 100,000 hours B10L90 @Ta25°C
>100,000 hours B50L90 @Ta25°C
Luminaire efficacy up to 111 Lm/W
Lumen output up to 8000 Lm

**Materials/Finish**
Body and Spigot: die-cast aluminium, powder coated texturized light grey (close to RAL9006)
Enclosures: toughened glass, self-cleaning treatment on request
Screws and closing set: stainless steel

**Installation/Mounting**
Rotating spigot secured by 2 screws with safety bolts
PostHap mounting: Ø60/76mm x 80mm long spigot. Tilted to 5°
Lateral mounting:
CL1 - Ø34/42/48/60mm x 120mm. Tilted to 0°
CL2 – Ø48/60mm x 120mm long (Ø34/42 reducer as accessory)
Cable gland for Ø8 to 13mm cable.
Delivered ready to install in 1 box.

**Standards**

<table>
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<tr>
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**Specification**
Easy to install and fully maintainable LED luminaire designed to offer effective and reliable lighting performances with combined thermal and optical system. Suitable for main road lighting applications up to ME3. As Thorn Oxane S.
**IVS**

**Product features**

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**Dyana LED 2**

**Light source**
- Total luminous flux: 10884 lm
- Luminaire efficacy: 102 lm/W
- Lamp efficacy: 93 lm/W
- Colour Rendering Index min.: 70
- Correlated colour temperature: 4000 K
- Rated median useful life: 100 000h L90 at 25°C

**Materials/Finish**
- Body, spigot and canopy: die-cast aluminium, textured dark grey finish.
- Flat glass cover: 5mm thick toughened glass.
- Gaskets: Ethylene Propylene Diamine rubber (EPDM)

**Installation/Mounting**
- Post-top mounting Ø60mm, tilt = 5°, 10°.
- End cap secured by 2 screws.
- Supplied complete and ready to install, in a single box. Weight: 12kg max.

**Standards**
- Specification
  - To specify state: IP66 and IK09 aluminium decorative street lighting lantern with Ø60mm post-top mounting, 10° tilt and IVS dedicated optic.
  - As Thorn Dyana LED.

**Number of LEDs**

<table>
<thead>
<tr>
<th>Number of LEDs</th>
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**Number of LEDs**

- LED MTP Size 2 Scx 0.059m²
- LED MTP Size 2 Scx 0.035m²
**Light source**
Total luminous flux: 1423 lm
Luminaire efficacy: 89 lm/W
Lamp efficacy: 89 lm/W
Rated median useful life: 100,000h L70 at 25°C

**Materials/Finish**
Body: aluminum powder coated NCS0500 (White)
Spigot: corrosion protected steel
Enclosure: 4mm clear toughened glass
Reflector: high purity anodized aluminium
Screws and clips: stainless steel

**Installation/Mounting**
Mounting spigot of female 3/4” pipe thread type (for Ø27G male threaded tube).
Large choice of fixings for post top, side entry or catenary (see Columns section of the catalogue).
Cable gland for Ø6mm to Ø13mm cable.
Access from below to gear and optic system after quick release of the hinged glass enclosure via ‘twist and lock’ design.
Automatic disconnection of the electrical mains when opening.
Mounting plate with optics and ballast has hinge suspension and stays attached when released.
Tool free connection to 2x2.5mm² terminal. Pre-wiring on request.

**Standards**

**Specification**
To specify state:
Full IP66 aluminium road and streetlighting luminaire. For 24W to 150W lamps and 1800Lm to 3000Lm LED. Female spigot mounting onto Ø27G tube. Automatic disconnection at opening and tool free access to and removal of lamp and gear tray. With options for electronic gears, dimming and lighting management system. As Thorn Victor.

<table>
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</table>
IVS
Product features

**Light source**
Luminaire Lumen output up to 9731 Lm
Luminaire Efficacy up to 108 lm/W
Lifetime 100,000 Hours @L90 Ta 25°C
Colour temperature: 4000, 5700K
CRI: 70

**Materials/Finish**
Die cast aluminium dark grey, texturized finish with dichroic flat glass (5mm)
Deflector: ABS anti UV white (RAL9016)
Gasket in EPDM
Frame: Aluminium with powder metalized aluminium and varnish finish

**Installation/Mounting**
Urba is delivered ready-to-install, in 1 single box
Available in 2 sizes, Urba offers flexibility of installation with:
- 60mm post top mounting (MTP)
- 0° tilt - secured by 2x M8x25 screws
Quick and easy to install, Urba allows low installation costs
Pre-wired versions as standard for quicker and easier installation

**Specification**
To specify state:
Highly designed urban street IP66 and IK10 lantern in two sizes, with IVS dedicated optic (up to 108 Lm). Post top mounting, Ø60mm. As Thorn Urba.

**Standards**

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Areaflood

Light source
Luminaire lumen output up to 19500lm
Luminaire efficacy up to 121 Lm/W
Lifetime 100 000 hours
L90 @Ta25°C
Colour temperature: 4000K and 5700K
CRI: 70

Installation and Mounting
Reversible mounting stirrup and aiming for horizontal position is simplified via 2 indicators depending on the stirrup mounting position. Cable gland for Ø8-12mm. Drop front glass access with 2 screws (size 1) or 4 screws (size 2). Direct access to LED drivers (size 1) or access via 1 screw on LED support plate (size 2). Delivered with stirrup. Choice of spigot adaptor for post top mounting the stirrup onto a column (Ø60 or 76mm). Fixes to column with 2xM10 bolts and nuts (supplied). Stirrup fixed by 2 bolts and washers (supplied). Choice of decorative bracket arm for mounting stirrup onto column (size 1 only, Ø60 or 76mm). Fixes via 4xM8 bolts (not supplied).

Materials and Finish
Body: die-cast aluminium (AS12U, EN AC-47100) powder coated texturised dark grey. Other RAL colours or special treatment available on request
Gasket: silicon (IP66 seal)
Hinges: polyamid glass fibre 20%
Glass: toughened (5mm thick)

Standards
To specify state:
High efficiency LED floodlight providing asymmetrical distributions with 60° peak intensity. Excellent control of obtrusive light thanks to inclined glass inside integrated visor (0 cd at 90°). Full IP66 / IK08 and easy maintenance of LED driver thanks to hinged front glass. As Thorn Areaflood LED.

<table>
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<th>Size</th>
<th>Number of LEDs</th>
<th>mA</th>
<th>K</th>
<th>Electrical Class</th>
<th>Description</th>
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5 Year Warranty
As a globally leading luminaire manufacturer, Thorn Lighting provides a five-year warranty for its complete product range within all European Countries.

www.thornlighting.com/warranty

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Publication No: IVS (Global Master)  Publication Date: 08/15

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